The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 89, NO. 19 CHICAGO, ILLINOIS NOVEMBER 5, 1927

COMPRESSION FRACTURES OF THE SPINE

DIAGNOSIS AND TREATMENT *

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I believe the following statements to be true:

1. Compression fractures of the spine comprise nearly half of all spinal fractures. They are common injuries.
2. They are very frequently not recognized early. Diagnosis is faulty.
3. They are often treated by unsound methods and serious disability ensues. The medicolegal aspect is important.
4. We know how to treat them and in uncomplicated cases, if we apply this knowledge, a return to full wage-earning ability may be confidently expected. This knowledge is not being generally applied.

The material on which these premises are based is afforded by a review of 242 fractures of the spine, distributed as follows: (1) 108 compression fractures of the spine occurring at the Boston City Hospital during the five year period from 1921 to 1926; (2) 114 cases of fracture of the spine occurring at the Massachusetts General Hospital from 1917 to 1927[1]; (3) twenty cases from office practice: four of my colleagues' and sixteen of my own, and (4) a cursory review of recent literature.

INCIDENCE

The review brings out the following facts as to incidence:

Sex.—A large majority of compression fractures occur in males, but the incidence in females is increasing with the increase in the use of automobiles and the more general participation by women in strenuous sports. This is true of all fractures of the spine.

In Hartwell's[2] series of 133 fractures of the spine of all types in 1917, only 5 per cent were in women. In my own series of 138 cases from the same hospital, but ten years later, 15 per cent were in women. In my own small office series, 40 per cent occurred in women.

Age Incidence.—A large majority of compression fractures occur during the active period of adult life. We do not expect to find these fractures in children, but we must not forget their possibility. Kirmisson[3] Hergens,[4] Temkin[5] and Sever[6] have reported cases in children under 12; two of my own patients in the series from the Massachusetts General Hospital were under 15, and a boy of 8, recently seen at the Children's Hospital, had sustained a fracture of the os calcis as well.

Anatomic Incidence.—Somewhat more than 40 per cent of all fractures of the spine are compression fractures. If the relatively unimportant group of isolated fractures of the spinous processes and transverse processes is excluded, compression fractures would comprise more than half of all spinal fractures. In the vast majority of cases, the body of only one vertebra is crushed. In between 70 and 80 per cent, this body is either the eleventh thoracic, twelfth thoracic, first lumbar or second lumbar. In between 50 and 60 per cent, this body is either the last thoracic or the first lumbar, and the first lumbar is much more commonly injured than any other single vertebra. In Wallace's[7] series of eighty-two cases, the only vertebrae never involved were the first and second cervical, the sixth cervical and the first thoracic. In the Massachusetts General Hospital series of forty-eight cases, there were no true compression fractures above the fifth thoracic. In my own small series there were no cases above the seventh thoracic, and there were four compression or impacted fractures of the second or third sacral segments, to which reference will again be made under treatment. I have found only one sacral fracture in the Massachusetts General and City Hospital series, and one of the first segment reported in the Wallace series.

COMPLICATIONS

In the cases in which typical compression fracture of one vertebral body is the essential lesion, and these are the cases which seem to me to justify this paper, complications have been rather rare in the material reviewed. These complications are neurologic symptoms, fractures of the laminae, fractures of the transverse or spinous processes, or fractures of the bones below the knee. I shall not deal with neurologic symptoms in this paper. Fractures of the transverse and spinous process seem to be comparatively unimportant lesions in private practice, more important in industrial patients who have been told that they have fractured their spines. Fractures of the laminae are important, but in the various series that I have reviewed and in my own, they have been less commonly associated injuries than I had believed. In fractures sustained from falls, the surgeon should always look for tarsal fractures, especially for fractures of the os calcis, more because of their disabling nature than because of their reported frequency.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. I have been assisted in these two reviews by Dr. Llewellyn Hall and I am indebted to the directors of these two hospitals for the opportunity afforded.
2. Hartwell, J. B.: Boston M. & S. J. **177**: 31 (July 12) 1917.
3. Kirmisson: Rev. d'orthop. **7**: 481, 1896.
4. Hergens: Inaug. diss., Leipzig, 1900.
5. Temkin: Thèse de Paris, 1910.
6. Sever, J. W.: Surg. Gynec. Obst. **22**: 328 (March) 1916.
7. Wallace, J. O.: J. Bone & Joint Surg. **5**: 28 (Jan.) 1923.

Three of Rogers'[8] series of eight patients sustained fracture of the os calcis.

CAUSATION

The commonest causes of these fractures are falls and blows. In one large series (Hartwell's) the falls, especially from heights, predominate; in another (Wallace's) blows from above comprise the majority. Railroad and automobile accidents are common causes also. The brakeman riding on top of a freight car, whose spine is bent sharply forward by a low bridge, and the farmer caught between his load of hay and the top beam of the barn door, are classic examples and suggest the mechanism of the lesion.

MECHANISM

This mechanism is forced hyperflexion of the spine, or jack-knifing, in nearly all typical cases. It is well to remember that a definite and potentially disabling compression fracture may be caused by surprisingly simple and seemingly slight accidents. Verneuil[9] recognized a case occurring from extreme muscular action alone in a successful attempt to escape a fall on the ice and reported two other cases of the same type. Hartwell's review suggests that hyperflexion of the spine is the commonest cause of all spinal fractures, and that the first thing to give way is the spongy vertebral body, which crushes. If the hyperflexing force is continued, the inelastic posterior arch fractures before the elastic interspinous ligament ruptures. Dislocations rarely take place except from direct blows.

DIAGNOSIS

The key that opens the door of diagnosis is suspicion. One should never fail to suspect this lesion after any accident that may have caused sudden hyperflexion of the spine. Once suspicion is aroused, the diagnosis has become easy since roentgenograms have become available. Unless the cervical spine is entirely free from symptoms and signs, films of the entire spine, including the sacrum, should be taken in two planes. If any doubt remains as to the integrity of any vertebral body or its laminae, stereoscopic films will usually dissipate the doubt or confirm the suspicion. This doubt may well exist. Kümmell,[10] in his second article on the subject, believes that there may not be any certain early roentgenologic signs, and yet if proper treatment is not provided, a typical wedge-shaped vertebra may be discovered later in association with typical delayed symptoms. Baker[11] also calls attention to the extreme care with which roentgenograms must be interpreted.

Santé and McCutchen[12] remind us that although in the anteroposterior view the affected vertebra will usually appear narrowed and perhaps broadened, these appearances may be masked if the direction of the rays is not parallel to the intervertebral disks or the body is rotated downward, in which circumstances the posterior portion of the body may cast a deceiving shadow. In the lateral view, the wedge-shaped body will be evident, unless only one lateral margin of the body is crushed, and under such circumstances the uncrushed margin may cast a like deceiving shadow. The intervertebral disks are occasionally injured but do not generally appear narrowed in the roentgenogram.

The history, and the symptoms and signs to be described which are revealed by examination, are the arousers of suspicion which the roentgenologic observations allay or confirm. I am convinced, therefore, that the most careful roentgenologic technic and the most experienced roentgenologic interpretation are necessary before the recipient of a hyperflexing injury to the spine can be assured that he has not sustained a crushing injury to any of his vertebral bodies.

The chief pitfall of differential diagnosis which needs to be avoided, especially in the late cases, is the exaggeration of a preexisting, unsuspected lesion of the Charcot type, caries of the spine, malignant disease, or a degenerative hypertrophic osteoarthritis.

SYMPTOMS AND SIGNS

Two things must constantly be borne in mind: First, early typical symptoms and signs of compression fracture of the spine may be masked by the general shock of the accident and the frequent more painful associated bruises or fractures. Second, even in the absence of such masking complications, the symptoms and signs of these potentially serious lesions may be so slight as to warrant only suspicion of a compression fracture. In all cases of possible injury to the spine, if this warrant is conscientiously served, future disability will be arrested. The typical symptoms and signs may be discussed under the headings Early and Late.

Early.—Pain referred to the back in the region of the lesion is the most constant single symptom. Limitation of motion is the most constant sign. Pain may be absent; limitation of motion is always present, though it may be sharply localized and scarcely appreciated by the patient, who calls it stiffness. Tenderness over the spinous process of the crushed vertebra is almost constant, and the presence of a prominence of this process and perhaps of those immediately above and below will convert circumstantial evidence into proof. In early cases this kyphotic proof may be lacking. The important point to emphasize is the usual absence of neurologic symptoms and signs and the rarity of true paralysis. They are often fleeting if they occur at all, and this circumstance wrongly allays the suspicion of the unwary.

Late.—Kümmell,[13] in 1895, reported five cases of injury to the spine which were followed at varying periods by serious discomfort, disability and the development of a kyphos. He first considered these symptoms and signs to be due to a traumatic osteoarthritis, but finally became convinced that they resulted from a true but unappreciated fracture of the vertebral body. He recognized three stages: first, the stage of initial injury; second, the stage of relative well being, and third, the stage of angular kyphosis and pain, often localized in the spine over the injured area or radiating down the extremities, neuralgic in character. In his second article in 1921, he lays stress on the fact that the characteristic feature of the type of cases he described, and which have since been called Kümmell's disease, is the absence of a clinically demonstrable lesion immediately following the primary traumatism and the definite symptom complex which develops months or years later. Mauclaire and Burnier[14] call attention to the relative frequency of delayed traumatic vertebral deformity, and Fosdick Jones,[15] Baker,[11] Henlé[16] and others report series of cases. Henlé looks on the increasing collapse

8. Rogers, M. H.: Boston M. & S. J. **193:** 494 (Sept. 10) 1925.
9. Verneuil: Bull. de l'Acad. de méd., 1892, no. 39, p. 496.
10. Kümmell, H.: Arch. f. klin. Chir. **118:** 876, 1921.
11. Baker, R. H.: Surg. Gynec. Obst. **31:** 359 (Oct.) 1920.
12. Santé, L. R., and McCutchen, L. G.: Radiology **5:** 490 (Dec.) 1925.
13. Kümmell: Deutsche med. Wchnschr., 1895, no. 2, p. 180.
14. Mauclaire and Burnier: Arch. gén. de chir. **6:** 274, 1912.
15. Jones, Fosdick: Compression Fracture of Spine Developing Delayed Symptoms, J. A. M. A. **81:** 1860 (Dec. 1) 1923.
16. Henlé: Arch. f. klin. Chir. **52:** 1, 1896.

of the injured vertebra as a sort of spondylomalacia. Baker records a compression fracture of the twelfth thoracic vertebra in which a sclerosis of the intervertebral disks immediately below and above the injured vertebra had developed eleven months after the injury.

In this connection an interesting case is that of a courageous but unequestrian man who rode horseback during a long afternoon of much more pain than pleasure. When his lameness disappeared, back symptoms remained, and, in spite of appropriate treatment, have continued for more than a year. The early roentgenograms did not show a lesion, but at present several of these intervetebral disks show calcified areas, although they do not reveal any compression fracture. I suggest that possibly these sclerotic changes may have resulted from the trauma of his repeated poundings in a partially flexed position, not sufficient to cause a fracture, but provocative of irritative changes in the intervertebral disks. It may be that in certain cases of persistent and obscure back symptoms this explanation may reward a search for such lesions.

TREATMENT

In considering treatment, I shall limit my discussion to cases of proved mild or severe compression fractures of single vertebrae without important neurologic symptoms or signs, and in which trauma is the only etiologic factor. I have sought for evidence which may indicate the methods by which a permanent return to complete functional activity may be most safely and expeditiously brought about in four types of cases:

1. *Fractures of the Sacrum.*—Impacted, crush fractures of the sacrum apparently heal quickly and permanently with very little treatment.[17]

2. *Early Cases of Fracture of the Movable Vertebrae and Without Discoverable Fractures of Other Elements than the Body or Centrum.*—The series of end-results reported by Wallace and Rogers and those in my own cases seem to show that full functional return in from four to six months may be confidently expected from recumbency in hyperextension with the spine immobilized in a plaster shell or jacket, or the excellent spinal bed devised by Wallace. This recumbency should be maintained for from six to eight weeks and should be followed by a gradual resumption of the upright position and ambulatory life, the patient to be protected by a stiff removable jacket or efficient brace or corset, which should be worn for from ten to sixteen weeks more. Physical therapy during the last five or six weeks is an important aid to rehabilitation.

I can find nothing to suggest that in the average case of this type any operative procedure is either necessary or advisable. It is undoubtedly justifiable in a case of severe fracture of this type with an irreducible kyphos in a man whose wage-earning capacity entails much bending or lifting of heavy weights for the surgeon to tell the patient that, although he will probably completely recover without any operative procedure, a fusion or bone graft operation which will comparatively quickly ankylose this portion of the spine is an extra safeguard against future weakness of the back. The decision should rest with the patient, not with the surgeon.

A careful analysis of the cases reported by Brackett, Mixter and Wilson,[18] in 1918, would, in the light of larger experience, hardly seem to justify their conclusion that most early cases should be subjected to operation. Most early cases do not present the indications which these authors lay down for operation; namely, (*a*) abnormal mobility; (*b*) increasing deformity; (*c*) extensive fracture of the body or laminae. Only case XVII of their series of the type of fracture I am discussing had been given nonoperative treatment such as that outlined above. This man returned to "similar but lighter" work as a brakeman.

3. *Early Cases with Complicating Fractures of the Laminae.*—I have not had any personal experience on which to base conclusions as to treatment when neurologic signs are absent. As far as the evidence has presented itself, nonoperative treatment seems to have yielded entirely satisfactory results. If much displacement exists and extensive callus seems likely to form, exploratory operation and perhaps an ankylosis by art would seem justifiable and indicated.

4. *Late Cases Presenting Symptoms of Disability and Pain.*—Kümmell's original six patients are said to have recovered function without operation. Deformity of the spine persisted. Baker's patients, in whom the condition had gone on to collapse of the centrum, were restored to a point at which symptoms disappeared and signs alone remained. Santé and McCutchen, after a review of 400 cases of fracture of the spine, say that "compression fractures heal by outgrowths of bone or exostoses from the margins of the injured vertebra, the intervertebral disks remaining intact." In 33 per cent of Wallace's cases, bone bridges were present. Sometimes these grow from the margins of the adjacent vertebrae. Many of the older cases showed massive bone bridges, and yet weak and painful backs were present; he well remarks apropos of these firmly ankylosed cases that bony fixation either by nature or by art will not alone relieve symptoms. In his words: "There is something to the problem besides bony fixation. This is fixation in the proper posture." He believes that even in the average old case his methods of hyperextension by means of his admirable bed and Markel's jacket are capable of restoring as large an amount of function in as short a time as any operative procedure. Dr. John L. Porter, whose large experience with insurance cases of compression fracture gives weight to his opinion, is quoted in the discussion of Wallace's paper as saying, "No matter how long after the fracture, if they are immobilized by such a method as Dr. Wallace describes, the pain disappears." On the basis of the evidence of end-result studies, I believe that the trial of conservative treatment in many old cases, as well as in the great majority of early cases, is not only justifiable but often advisable. My personal experience agrees with this evidence.

I am of the opinion, however, that with old cases exhibiting persisting disability and pain, and not showing internal fixation by nature's bone bridges, one is justified in advising an ankylosing operation as an extra safeguard after the faulty mechanics and posture have been corrected. In active wage-earners who must put constant strains on the spine, I believe that this is just as preventive, conservative and time-saving surgery when performed by skilful hands as it is in cases of caries of the spine in adults when the tuberculous process seems arrested and on the way toward healing.

COMMENT

1. One should suspect compression fracture in all spinal injuries. The condition is usually missed. In

17. This statement is based on four personal patients, one of whom was the writer, an enthusiastic but unskilful skier.

18. Brackett, E. G.; Mixter, W. J., and Wilson, J. C.: Ann. Surg. **67**: 513 (May) 1918.

Wallace's series, in only seven cases did he obtain charge of the patient early and in forty-seven of the remaining sixty-seven, or 70 per cent, the diagnosis had not been made before he saw the patient. Sever, reviewing twenty-four industrial cases of compression fracture, found that the minimum period of disability before the case was seen by an impartial referee was 17.7 months.

Fig. 1 (case 1).—Anteroposterior view: compression fracture of third lumbar vertebra.

2. When suspicion is aroused, it should be confirmed or allayed by accurate roentgenologic films taken in both the anteroposterior and the lateral plane; if doubt remains, stereoscopically as well.

3. Complicating fractures of the laminae, transverse and spinous processes, occasionally of the articular processes or of the ribs and of the bones of the extremities, especially of the os calcis, are often present and influence treatment.

4. In early uncomplicated cases, adequate nonoperative methods of treatment may be expected to restore full wage-earning capacity.

5. In old cases presenting symptoms, the reduction of the postural faulty mechanics may be expected to relieve the pain, and in many cases the disability as well. If nature has not ankylosed the injured region of the spine, and the patient is to return to strenuous back-bending labor, ankylosing operations after the faulty mechanics have been corrected are likely to save time and allow the patient to labor without apprehension.

A series of my own case reports illustrating different types of patients and different types of treatment is appended.

Fig. 2 (case 2). — Lateral view: compression fracture of the seventh thoracic vertebra.

REPORT OF CASES

CASE 1.—*Typical early case treated adequately without operation.* A girl, aged 14, tobogganing with a reckless companion, hit a bounce, shot through the air, and struck the ice with tremendous impact. They did not tip over. She was not unconscious. Sharp pain in the back was immediately felt. She was most comfortable lying on her stomach, was dragged to a house and thence taken home in an automobile, and was seen by her family phsician, who did not find anything wrong. In four days, pain at about the waist line continuing, consultation was sought.

There was no disturbance of the reflexes, no disturbance of sensation or motion in the lower limbs. Attempted movements of the spine were acutely painful. There was tenderness to pressure and increased pain on pressure over the spinous process of the third lumbar vertebra. There was no visible kyphos. A bedside roentgenogram revealed a severe compression fracture of the third lumbar vertebra. A long plaster jacket including the buttocks and thighs was applied in ventral recumbency, and anterior and posterior shells were prepared. In these the patient remained immobilized in recumbency for eight weeks. She was then allowed to sit up in a closely fitting jacket, sleeping in the posterior shell. At three months a light protective spring back brace was supplied and baking, massage and light exercises prescribed. At five months normal activities, but no sports, were possible and the roentgenogram showed good consolidation of the crushed vertebra and no atrophy or excessive overgrowth. At six months she was discharged well. This injury was sustained ten years ago. The patient has been married and has borne and reared children and done her own housework without back symptoms.

CASE 2.—*A typical early case treated theoretically inadequately, but illustrating the necessity of making the cloth fit the pattern.*

A busy obstetrician of 54, overweight, slipped on the ice and struck his back on stone steps, bending the upper portion of the spine sharply forward. He had momentary difficulty in breathing. He succeeded with difficulty in arising, and on reaching his home he went to bed. He found his ribs intact. There was tenderness over the spinous processes at the level of the lower angle of the scapulae, and pain on motions of the upper spine. He hesitated to take a long breath. The next day he attempted to resume his practice, but pain in the back became severe and great fatigue ensued. His digestion was upset. He sought advice, disturbed over his condition, worried over some important patients soon to be confined, whose labor he felt he must supervise at the risk of his own health. He had been overworked, had had some hypertension, and was apprehensive of a hypostatic pneumonia if he should be confined to bed.

Fig. 3 (case 3). — Lateral view: compression fracture of the twelfth thoracic vertebra.

The patient was rather flabby muscled; he stood in bad posture, with normal reflexes and no disturbances of sensation or motion except in the spine. The chest expansion was 5 cm., his normal expansion being 10. There was a rounded general dorsal kyphosis and greatest tenderness to pressure over the spinous process of the seventh thoracic vertebra. The roentgenogram revealed a slight compression fracture of the seventh thoracic vertebra. It was a choice between complete standard immobilization in bed (which to be adequate would include fixation of the cervical spine and head) and efficient protection in ambulation. In view of the patient's general physical condition, his apprehensions and his exigencies, a complete back cuirass of long decussating strips of adhesive plaster extending from the clavicles over the shoulders to the pelvis on the opposite side and enforcing hyperextension was applied and changed weekly for four weeks. Skeleton professional activities were allowed. Thereafter an efficient spring back brace was worn by day and a corset by night. In three months the patient had resumed all the activities which his brace allowed, and postural exercises were begun. The brace was gradually omitted as his muscles and stance improved and at seven months he was discharged and has remained without symptoms and engaged in a strenuous practice for more than three years.

CASE 3.—*Typical case not seen early, but treated conservatively with return of full function.*

A woman of 46, in good health, was riding in an automobile which was speeding up a hill on an apparently straight road. At the top of the hill the road turned suddenly and was blocked by a farm wagon. Her husband, driving, turned sharply into a field, which was not noticed to be terraced, and the automobile and its human contents dropped 6 feet. The woman's head hit the top of the car and her spine was bent sharply forward. She was stunned, but not unconscious. With fortitude and in order not to alarm her husband she extricated herself from the wrecked car, walked to a hotel a few rods away suffering from general body pain and headache, but managed to go down

to dinner. The headache increased and became the dominating symptom. The next day she was transported to her home a hundred miles away, seen by her physician, and sent to a hospital. A roentgenogram of the skull revealed a fracture of the outer table of the frontal bone. There were general body contusions, pains in the legs and some disturbance of micturition, but no gross neurologic disturbances. The spinal symptoms did not attract attention until about three weeks after the accident, when the head symptoms having gradually disappeared, the patient was allowed to get up. At this time weakness in the back and pain attracted the physician's attention, a small rounded kyphos was found, and finally a roentgenogram of the spine revealed a severe compression fracture of the twelfth thoracic vertebra. Special advice was sought, and in the absence of all symptoms except back pain and a slight rounded, tender kyphos, a plaster shell was applied in which the patient remained recumbent for nine weeks. The obvious kyphos disappeared. An efficient protective brace with shoulder straps was then substituted and worn by day and the posterior shell by night. In six months the brace was shortened and the shell omitted at night. In eight months a fairly stiff corset with good lines was applied and all symptoms remained in abeyance. At present, more than two years after the accident, the patient is doing her housework without discomfort and has resumed her normal activities.

Fig. 4 (case 4).—Lateral view: compression fracture of the twelfth thoracic vertebra.

CASE 4.—*Typical old case due probably to muscular action alone, not receiving adequate early treatment, with persisting but not disabling symptoms, for which an ankylosing operation has been suggested.*

An athletic stockbroker of 49 wrenched his back severely in skiing but did not fall heavily. Pain in the midback was immediate but not completely crippling, and he sought medical advice. His physician strapped his back. The roentgenogram revealed a slight but definite compression fracture of the twelfth thoracic vertebra. No neurologic symptoms developed and the patient was kept in bed without protection to the spine for one month and then allowed to get up with a low corset. This he found uncomfortable, and as his back seemed well he discarded it. Pain in the back soon returned and began to cripple his activities. He was unable to take any exercise, and if he turned suddenly at night the pain woke him up. He sought other advice three months after the accident.

The examination did not show obvious kyphos. The motions were restricted in all directions by muscle spasm. The reflexes were normal and there were no disturbances of sensation or motion. There were no signs of arthritis in any other joints. The corset belt, which he had reapplied, offered almost no protection to the region of the injury. The patient refused to submit to recumbent treatment. An efficient back brace with elastic shoulder straps was applied, and the patient gradually became more comfortable and finally free from pain six months after the injury. He abandoned the brace against advice and had a slight return of symptoms. In view of the lack of early efficient immobilization and the patient's intolerance of apparatus, the persistence of mild symptoms, and his eagerness to lead a strenuous physical life, an ankylosing operation was suggested, but refused. He is now symptomless with a short back brace and no shoulder straps, his postural fault having been corrected.

CASE 5.—*Typical old industrial case undiagnosed for a month and inadequately treated for a year. Failure of fixation (inadequate) to relieve symptoms permanently under heavy work; ankylosing operation to permit patient to return to old strenuous occupation.*

A strong, heavy, round shouldered man, a roofer, standing on the ground, was pulling up a weight to the roof. His employer, standing on the roof, in some way became entangled in the rope and fell, striking the patient from above. The employer was immediately killed. The patient was taken to his home and thence to a hospital, bruised and in some shock. There were no notes of neurologic symptoms. A month or more later, a diagnosis of a compression fracture of the first lumbar vertebra was made and a plaster jacket was applied to the now ambulatory patient. Jackets were renewed at intervals and the patient's low and midback pain almost disappeared. He was advised to return to light work after the removal of the last jacket some nine months after the accident. He found that he could stand very light work without intolerable discomfort, but could not do lifting or heavy work without severe pain referred to the region of the fractured vertebra. Several honest attempts at reasonable work were made up to a year from the time of the injury, but the attempts had to be abandoned. This industrial case was then referred for an impartial opinion. Since the man's trade involved the constant possibility of strains and his disability was already prolonged, he was advised to undergo an operation consisting of a fusion of the tenth, eleventh and twelfth thoracic and the first and second lumbar vertebrae. This operation was performed by my associate, Dr. Philip D. Wilson, and the man was able to resume his occupation in six months without symptoms.

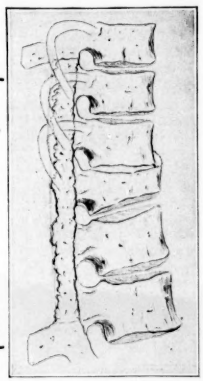

Fig. 5 (case 5).—Lateral view: compression fracture of the first lumbar vertebra. Ankylosing operation fusing the eleventh and twelfth thoracic and first, second and third lumbar vertebrae.

I ask special consideration for the sixth case, since it represents an attitude of the profession which for purposes of emphasis I will describe as prevailing. This attitude toward obscure injuries to the spine may be characterized as being conscientious, but disturbingly and sometimes disastrously unsuspecting.

Fig. 6 (case 6).—Lateral view: severe compression fracture of the twelfth thoracic vertebra; nearly complete anterior bone bridge.

CASE 6.—*Typical old case undiagnosed for three months with increasing pain, increasing deformity and increasing neurologic symptoms.*

A woman of 45, sound in body and mind, was riding in an automobile which disputed the right of way with a steam engine. She was unconscious for a time after the accident. She was taken to an accredited general hospital, where she was supposedly carefully examined and said to have been studied roentgenologically. The diagnosis of shock and of minor injury to the right elbow was made. She was allowed to travel from the Provinces to the States and came under the care of an excellent general practitioner. He was fortified by the obser-

vations at the hospital that no serious injury had been sustained, but noting that the symptoms of which the patient complained were cramplike pains in the legs and weakness and unsteadiness in walking, he called in an eminent neurologist. This consultant made a careful examination and, finding no gross disturbances of sensation or motion and no sensitiveness or malalinement of the spine, made the diagnosis of a functional disturbance, "shell shock," which diagnosis the circumstances of the accident entirely justified. The patient was urged to greater activity.

The patient readily and with relief accepted the diagnosis and made honest and persistent effort to regain her mental and physical equilibrium. Some success crowned this effort, but the cramplike pain and weakness of the legs increased and the general practitioner sought the advice of a surgeon in relation to support for the lumbosacral and sacro-iliac regions. The gait was very unsteady. Weakness in both quadriceps groups, absent knee jerks and a right foot drop and Babinski sign had developed. The back was symptomless, but a slight rounded dorso-lumbar kyphosis, absent at first, was now noted and more than normal rigidity in this region without appreciable muscle spasm. Roentgenograms in both lateral and anteroposterior planes revealed a severe compression ("crush") fracture of the twelfth thoracic vertebra, and the patient's symptoms and the nature of the main injury were explained three months after the accident. Recumbency in a plaster shell was enjoined; gradually the cramplike pains disappeared and the patient began to sleep well at night. In two months the Babinski sign had disappeared and voluntary power of dorsal flexion of the right had returned. The gait became steady. Within three months the knee jerks had returned. These serious symptoms of cord involvement were absent when the first neurologic examination was made. They ensued because of lack of adequate treatment. Full recovery of function seems to be on the way. An internal fixation of the injured region appears to be taking place by nature. A fusion operation will be advised if symptoms persist after the greatest amount of correction of the body mechanics has been obtained, if nature does not fuse the vertebrae by bone bridges. The patient has already returned to her occupation of governess, wearing a light spring back brace.

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ABSTRACT OF DISCUSSION

DR. ALAN DEFOREST SMITH, New York: This type of fracture is very frequently missed entirely, and when recognized is treated very badly. The disabilities resulting are quite numerous. Fractures of the spine can be classified into two groups as regards treatment: one with and one without cord injury. Our experience at the New York Orthopedic Hospital has not been exactly that of Dr. Osgood. In the majority of our cases, the results were bad. There was disability of greater or lesser degree in these fractures, if they were not fixed surgically by a spine fusion operation. These patients have weak backs which are more or less painful, and which tend to become more and more so. We are agreed that all of these patients, no matter how treated, should be recumbent for a period of at least eight weeks. Since results are poor without the fusion operation, it is better in the majority of cases to operate as soon as the general condition of the patient warrants it, so that we may be sure that the patient will be able to go back to work and lead a normal life, without having a weak, painful back when he does get up. The result of such an operation is very good in the great majority of cases. The operation is not dangerous, if it is done by one who knows how to perform it and who is used to doing spine surgery. The harm that may be done by an unskilful operation is great. We find in operating on compression fractures of the bodies that there are associated fractures of the arches that we have been unable to find in the roentgenograms made before operation. Fracture of a lamina or of a pedicle may be an additional cause of pain. Our conception of this condition is that the pain is due to the bad mechanical condition which results from the deformity and to the strain which comes on the lateral articulations. Regardless of whether the bodies fuse together afterward, this will probably result. In cases of cord injury, operation is called for as an emergency measure whether or not there appears to be a complete cord injury, because no one can tell whether the cord has been completely destroyed or not. The patient should have the benefit of the doubt. In doing a laminectomy, a subperiosteal exposure of the laminae entails very much less shock, and we can see the conditions present better than if we slash down through the muscles, causing a great hemorrhage and shock. In every case of laminectomy, an arthrodesis of the lateral articulations should be done at the same time, in order to avoid the weakness which results from the laminectomy itself.

DR. JAMES O. WALLACE, Pittsburgh: I have seen 212 patients in about five years. Only about five have complained of pain at the site of the fracture afterward, or of disability. In the majority of the patients with disability, the disability was in the lumbosacral joint. My feeling is that operative work should be done at the lumbosacral joint.

FRACTURES ABOUT THE ELBOW*

NATHANIEL ALLISON, M.D.
BOSTON

Fractures about the elbow are almost always the cause of serious concern. Ample testimony to the truth of this fact can be given by most practitioners of medicine or surgery who have had much experience, as these fractures have led to disaster both to the patient and to the physician. An elbow which has wholly or partly lost its motion, a deformed elbow, paralysis or partial paralysis of the forearm and hand, Volkmann's contracture, and myositis ossificans are not infrequently the results of fracture at the elbow. Such unfortunate experiences lead to loss of elbow function for the patient and loss of reputation for the physician, and often are complicated but not settled by suits for alleged malpractice.

The reasons for disaster following elbow fracture are simply stated. Unfortunately, they are not remembered as vividly as they should be in many instances. The reasons for disaster are anatomic. The elbow joint is a complicated articulation made up by three bones: humerus, ulna and radius. In fact, there are three joints: that between the humerus and the ulna; that between the humerus and the radius, and that between the ulna and the radius. The nerve trunks which supply sensation and motion to the hand and forearm are closely related to the bones of the elbow joint, consisting of the median, the musculospiral, and the ulnar nerves. The blood vessels which give blood supply to the hand and forearm are closely bound up with the bones and nerves at the elbow joint; they comprise the brachial artery and its branches, and the median basilic and median cephalic veins and their branches.

INJURY TO THE ELBOW

The elbow is exposed to direct traumatism with only slight protection for its essential parts. This anatomic arrangement of structures leaves little room either for displacement of bones or for swelling. Injuries and fractures at the elbow demand an appreciation of what can happen to its parts as a result of (1) bone displacement, (2) nerve injury, and (3) circulatory disturbance.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

Bone Displacement.—Fracture or dislocation, or both, may cause bone displacement at the elbow. The common dislocations are backward, mesial or lateral displacements of the forearm.

The common fractures are:

1. Fracture of the lower end of the humerus:
   - (*a*) Supracondylar.
   - (*b*) Transverse diacondylar.
   - (*c*) Internal condyle.
   - (*d*) External condyle.
   - (*e*) Intercondyloid, T fracture.
   - (*f*) Epicondyle.
   - (*g*) Separation of epiphysis.
2. Fracture of the head or neck of the radius.
3. Fracture of the ulna:
   - (*a*) Olecranon.
   - (*b*) Coronoid process.

These fractures may be simple or compound, may exist in combinations, and may be associated with dislocation. They occur more frequently in children and in young adults. In children and adolescents, the ossification of the region is essentially as follows:

At birth, the lower end of the humerus and the upper end of the ulna are cartilaginous. The centers of ossification which appear unite at about the seventeenth year, except the mesial epicondyle, which is solid at the eighteenth year. The olecranon epiphysis is not important and unites at the sixteenth year. Separation of the lower humeral epiphysis is frequent. The radial head and neck epiphyses unite at the sixteenth to the nineteenth year. Therefore, before the eighteenth year, separation of the epiphyses in the elbow region must be considered in all injuries of the elbow.

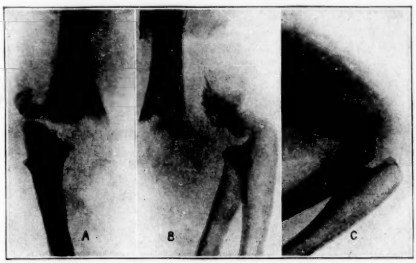

Fig. 5.—Typical fracture of the lower end of the humerus with separation of the epiphysis: *A*, anteroposterior view; *B*, lateral view; *C*, reduction by acute flexion; result, normal elbow function.

The structure of the elbow provides for an angulation between the axis of the humerus and the ulna when the forearm is extended. The carrying angle is an angulation produced by the lowered level of the internal condyle when the arm is parallel to the trunk. When the elbow hinge is open, the angle formed laterally is about 165 degrees. When the elbow hinge is closed, that is, when the arm is flexed, this angle disappears. The elbow joint looks forward; that is, the angle of the joint with the shaft of the humerus is 130 degrees forward instead of downward.

In right angle flexion of the elbow, the tip of the olecranon, the internal condyle and the external condyle form a triangle. In extension, these bony joints move into direct line with one another. The head of the radius is felt about half an inch distal to the external condyle.

The first thing to be done with the hurt elbow is to find out the nature and extent of the injury. The most important thing to realize is that there is no need for heedless haste. Take it slowly; proceed carefully; do nothing until it is clear that what is being done is neither harmful nor dangerous.

Examination of the elbow is necessary. Examine the well arm first, noting the range of motion in flexion and extension, and in supination and pronation of the forearm. The relation of the bony points of prominence, the external condyle, internal condyle and olecranon tip should be observed. Feel the radial head. Do all this gently, gaining the patient's confidence.

Nerve Injury and Circulatory Disturbance.—Examine the injured elbow. Note first the presence of deformity; gently test the circulation. Is the region of the elbow blue and swollen? Is the radial pulse the same as on the well side? Is the skin discolored or broken? Can the patient move the elbow in flexion and extension? Can he pronate and supinate? Has he a nerve injury? If he can close his fingers, if he can spread his fingers, if he can extend his wrist, and if there is no loss of sensation over the back of the thumb, he does not have a serious nerve injury.

Careful record of these observations will do much to prevent dangerous and harmful procedures. It should be remembered that there is plenty of time for a thorough examination. Definite knowledge of the nature and extent of the bone injury is now necessary.

Roentgenographic examination is essential. It should be done without additional injury to the elbow. Plates in two planes are necessary: directly lateral, and as near the anteroposterior as possible. Additional trauma should be avoided. After the plates are taken, carefully study the facts which they reveal. Do not jump to conclusions. Take more plates if necessary, before deciding definitely on a plan of treatment. Do not hurry. Keep the patient as comfortable as possible, supporting the injured arm on a pillow, and keeping an eye on the circulation of the forearm and hand.

Diagnosis.—In children the usual elbow injury is a fracture of the lower end of the humerus. This may be a transverse supracondylar fracture, a separation of the lower humeral epiphysis, a discondylar fracture with vertical crack into the joint, or a fracture of either condyle alone. There is also so-called pulled elbow, which is an indefinite injury to the radio-ulnar circulation, produced by pulling the child's arm; it is of the nature of a subluxation of the radial head.

Radial and olecranon fractures are not usually encountered in children.

Adults frequently sustain fractures of the radial head and neck, and of the olecranon.

In all elbow fractures there may be displacements which are similar to dislocations. Dislocations without fracture are rare, but do occur. Dislocation with fracture is not an uncommon occurrence. It is highly important not to overlook nerve injury and disturbance of the circulation. All elbow injuries are possible combinations of fracture, nerve injury and Volkmann's contracture.

Treatment.—In all elbow fractures, the first step in treatment is reduction of the bone displacement. It is necessary to give a general anesthetic to accomplish this. This rule is of great importance, and exceptions

should be exceedingly rare and should have a very definite basis.

Reduction of fragments is accomplished in simple fractures of the lower humerus supracondylar, intercondylar T fracture, external and internal condyle, and epicondyle by grasping the arm of the patient with one hand and the forearm with the other hand. Pull the elbow down, swing it forward, and acutely flex the forearm. This should be done slowly and steadily, and in such a manner as to cause as little additional trauma as possible.

A general anesthetic should always be given when this procedure is undertaken.

The "pulled elbow" is reduced by supination and flexion of the forearm. Radial head and neck fractures require manipulation of the forearm into complete supination. Olecranon fracture requires complete extension of the forearm, with manipulation of the displaced fragment so that it is placed in contact with the shaft.

SPLINTS AND BANDAGES

The position of acute flexion of the forearm on the arm is the position required for all simple fractures about the elbow, after reduction, with the exception of fracture of the olecranon, and certain complicated comminuted fractures. A right angle elbow splint is an improper splint, because the lower end of the humerus looks forward 130 degrees. The joint surface is not placed on the lower end, facing downward, but looking forward. Consequently, the right angle position does not reduce the deformity. Acute flexion of the elbow does reduce the deformity. The so-called gun-stock deformity of the elbow following fracture is due to the fact that the lower end of the humerus has not been properly corrected. Also, the carrying angle will be lost or reduced unless the internal condyle is brought back to a position more distal than the external condyle. Acute flexion will accomplish this. After manipulation and correction by acute flexion, the upper extremity is to be held in the position of acute or "hyperflexion" (Ashhurst).

The Lund Swathe.—This swathe is described by Lund[1] as follows:

> A cotton swathe of the width of the shoulder, and long enough to make a figure of 8 around the elbow and body, is passed under the flexed elbow horizontally, its center being at the point of the elbow. The proximal end is carried snugly up around the forearm and over the shoulder, and the distal brought forward around the arm, across the front of the chest, and under the opposite arm. It is pinned to the end which has been brought over the shoulder behind the back of the patient.

1. Lund, F. B.: Boston City Hospital Report, 1897.

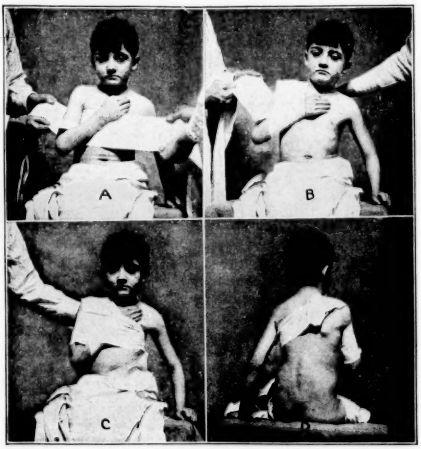

Fig. 11.—The Lund swathe: *A*, a strip of muslin the width of the shoulder is passed under the arm and across the chest; two persons hold the swathe; *B*, one end is then brought under the forearm and over the shoulder; *C*, the other end is then passed round the body; *D*, the two ends are securely pinned back of the shoulder. It is well to pad the bend of the elbow with cotton and to powder the axilla and skin surfaces with talcum powder.

This swathe has no points of local pressure. It will stay in place and it is comfortable, but its greatest value is that it does not constrict the return circulation.

Among the many means of applying a bandage to secure acute flexion at the elbow are adhesive strips, a plaster-of-paris gutter splint, or a sling, the corners being sewed together. The Lund swathe is the best for general use, because it does not constrict the circulation. The position of acute flexion will stop the radial pulse—this can be demonstrated at any time on one's own arm. Therefore, one can always know that the radial pulse has not been cut off by the dressing. The skin should be cleansed and powdered, the axilla especially; a piece of cotton or soft muslin placed in the flexure of the elbow, and then the swathe adjusted and pinned in place.

Much of the trouble which follows fractures of the elbow comes from a tight dressing applied to an arm which has an increased swelling. It is a common experience in medical practice to be blamed, and perhaps to be to blame for the Volkmann's contracture which follows the application of splints, bandages, adhesive plaster or plaster of paris to fractures at the elbow. One can avoid this disaster by always being sure that the return circulation is not delayed.

Aside from the simple, easily reduced and easily cared for fractures of the elbow, there is a group which demands the utmost of surgical skill in order that function may not be lost or reduced. In this group are included fractures which enter the joint, especially the T fracture of the lower end of the humerus; olecranon fractures, and severe compound comminuted fractures.

Operative treatment is often demanded. This should never be attempted without full realization of the dangers and responsibilities entailed. In general, it may be said that T fractures require snugging up of the two condyles by some form of operative treatment. Olecranon fractures do best with prompt suture and early function.

Compound, comminuted fractures with or without dislocation are serious surgical conditions and demand expert surgical care, in a hospital if possible.

SEQUELS TO FRACTURE OF ELBOW

The disasters which follow fracture of the elbow are Volkmann's contracture, nerve injury, stiff elbow, and myositis ossificans.

Volkmann's Contracture.—This curious disaster arises from one thing and that only—interference with the venous return flow of the blood. There are two stages in its development. In the first stage,

edema, cyanosis and lowering of surface temperature are present. Pain and paresthesia may be severe. During the second stage there is progressive fibrosis of the muscles, resulting in a fibrous change in all the tissues, with progressive loss of motion, with varying degrees of anesthesia, but without the true reaction of degeneration. The pulse volume is reduced, and the sensory disturbance is irregular in distribution. There are all degrees of Volkmann's contracture, from slight to very severe.

After fracture at or near the elbow, disturbance of the circulation is very apt to develop. This is especially true when bandages or splints have been applied soon after the injury. The result is well recognized—Volkmann's contracture develops. Barney Brooks has shown experimentally that the process is not an ischemic paralysis; in fact, it is the reverse. Venous blood is held in the muscles which become engorged, the muscle fiber bundles disintegrate, and fibrous tissue replaces them. Volkmann's contracture, described by Richard Volkmann, in 1875, is not a nerve paralysis at all. It is a true muscle contracture, and is recognized in its late stages by cold, blue skin, marked muscle atrophy, and claw hand contracture. In its early stages it is not so easily recognized, but its recognition is of the greatest importance. After an elbow injury, if the elbow is much swollen, the forearm blue and cold, and the wrist tending to assume a position of flexion, one may assume that Volkmann's contracture is in process of creation. This will happen in the entire absence of constriction due to dressings, splints or bandages. In the fracture service of the Massachusetts General Hospital, three such cases have been carefully observed. In each instance no bandage, splint or dressing of any kind was applied, but nevertheless typical Volkmann's contracture developed. In Thomas' report of 107 cases (1909) the great majority of patients gave a history of splint application. In 79 per cent of Economo's 144 cases, reported in 1916, plaster-of-paris dressings were applied. One might discuss with impunity the rôle played by dressings and splints in the causation of Volkmann's contracture. Authentic reports show that the contracture in its worst forms may occur even when dressing, splints or plaster have not been used. But, on the other hand, the contracture follows rapidly the application of dressing, splints, and plaster-of-paris in the majority of cases and the physician is blamed for its occurrence. Therefore, it seems only wise that these facts should not be forgotten when the next and all following cases of elbow injury present themselves. There is not the least cause for hurry in these cases. It is a great mistake to apply splints or plaster-of-paris bandages to an increasing swelling; rather they should always be applied to decreasing swelling, and then always loosely applied. Plaster of paris, if used, should be split immediately after application. In case the circulation is interfered with by swelling about the elbow, prompt incision of the bicipital fascia with relief of blood clot and tension is strongly indicated. This was advocated by J. B. Murphy some years ago but is not generally known. It should be done in time to prevent the contracture. The reduction of fragments and the proper splitting of the fracture should never be attempted when the slightest danger exists of interference with the venous circulation. It is better simply to observe, and stand ready to release the return blood flow.

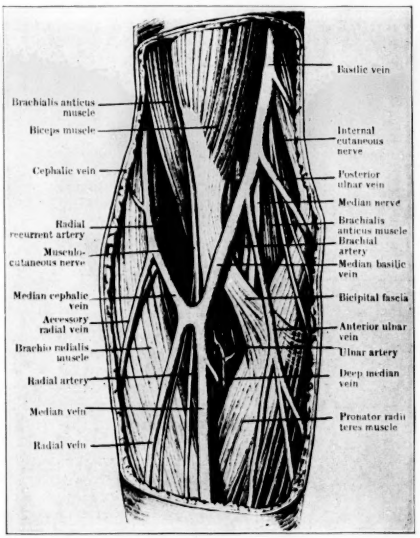

Fig. 14.—Superficial veins at the end of the elbow. Tight bandaging or swelling will cause Volkmann's contracture.

NERVE INJURY

In all fractures at or about the elbow, the possibility of peripheral nerve injury should be one of the uppermost thoughts in the physician's mind. It is far better to discover by careful examination that nerves have been injured before treatment is started than to have this fact thrust on one afterward. The nerves which may be injured by fracture at or near the elbow are the musculospiral, the median, and the ulnar. Anatomically, the arrangement is convenient for nerve injury, especially to the ulnar nerve, less to the median, and still less to the musculospiral.

Of the paralyses of the musculospiral nerve, 32 per cent are caused by fracture of the lower third of the humerus. Of the median nerve paralyses, 75 per cent are caused by fracture of the lower third of the humerus. Of the ulnar nerve injuries, 90 per cent are caused by fracture of the lower end of the humerus. These paralyses may be primary or secondary, meaning that in certain instances the nerve is injured by the fragments at the time of fracture, or that the nerve is gradually injured by pressure from callus formation.

The primary lesions chiefly concern us here, but it stands to reason that improperly reduced fractures at the elbow, or excessive manipulation in attempts at reduction, may have much to do with the secondary paralyses.

The primary lesions of the musculospiral nerve are discoverable by the simple fact that wrist extension is lost and that there is numbness or lack of sensation on the back of the thumb side of the hand. The primary lesions of the median nerve are made out by the simple fact that the fingers cannot be flexed, and there is lack

of sensation in the palm on its radial side. The primary lesions of the ulnar nerve are made out by the simple fact that the fingers cannot be spread and that the little finger and ring finger have numbness or loss of sensation. This is all one needs to know for ordinary purposes. These facts are readily established and they should be tested in all fractures at or about the elbow.

Late paralyses due to pressure from callus formation, especially of the ulnar nerve, are important surgical lesions and not infrequent. One fact usually stands out when these conditions develop: there is no knowledge of what the condition of the nerves was just after the injury. Again, elbow fractures should always be regarded as potentially the cause of serious peripheral nerve paralyses.

Stiff Elbow; Myositis Ossificans.—After fracture of the elbow region, there usually follows a period of more or less stiffness of the joint. This is more often the case when early active motion has not been allowed. On removal of the dressings the patient finds it impossible, without pain, to move the elbow through more than a few degrees of motion. It is often the custom of practitioners of medicine to seize such an elbow and try by possible forcible motion to secure a better range of movement. This form of treatment is painful, needless and harmful, and accomplishes additional stiffness of the joint. If the roentgenogram does not show any bony block to movement, if physical examination does not reveal any marked deformity or nerve paralysis, then take it easy, allowing the patient to restore motion to his elbow in his own way and at his own time. Children who have stiffness after elbow injury will almost always restore the joint to free motion if let alone. They may be encouraged to use the arm at play, or be asked to carry coal buckets or water buckets as a form of exercise. But letting them alone is the most important thing. Time and functional use will do most for this type of stiff elbow.

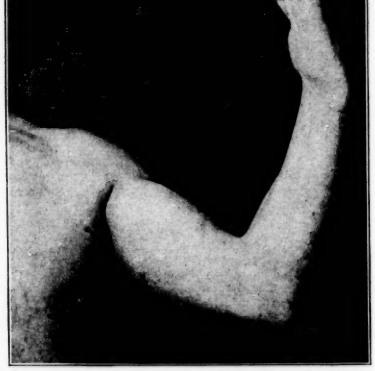

Fig. 16.—Volkmann's contracture in an adult: This contracted, useless claw hand is caused by interference with the circulation after elbow injury either by swelling or by tight bandages.

In elbow fractures in which the joint surfaces have been severely injured or in which bone displacements cause mechanical block to joint movement, operative treatment is at times indicated, such as arthroplasty or removal of bony obstructions to movements.

Myositis ossificans, or ossifying muscles, is a term rather loosely applied to a definite type of elbow stiffness. Usually, after fracture of the lower end of the humerus, there is a stripping of the periosteum on its anterior surface (of the humerus) and the extravasation of blood clot and hematoma formation. This area of extravasation may ossify, giving a strip of new formed bone across the front of the joint. The tendency to this form of joint obliteration exists in most severely contused and fractured elbows. These ossifying hematomas occurring beneath the brachialis anticus muscle form a definite band across the front of the capsule from the humerus to the coronoid process of the ulna.

Fig. 19.—Myositis ossificans: In this instance the periosteum was stripped from the anterior surface of the humerus at the time of the elbow fracture. There developed a bridge of dense bone between the ulna and the humerus which has completely ankylosed the elbow.

The best way to avoid this disaster is to avoid repeated and forcible attempts at reduction of fragments. Reduction should be accomplished gently, not by main force, and the elbow should never be churned or pump-handled. Early attempts to reestablish motion in a fractured lower humerus may do much to cause the development of so-called myositis ossificans. This process will lessen if the joint is immobilized. Operations for its relief will often result in a firmer type of myositis. It usually occurs in boys near or above the age of puberty, and should not be disturbed by attempts at removal, until the tendency to ossification has disappeared.

SUMMARY

This that is written here makes no pretension at being a treatise on the details of the surgery of elbow fracture. Its purpose is to point out some positive facts about elbow fractures which should be the common property of practitioners of medicine. These facts are that:

1. Elbow fractures imply: (*a*) bone injury; (*b*) nerve injury; (*c*) circulatory disturbance. Always think of these three things.

2. Haste is not necessary. Get roentgen-ray plates which show two views of the region. Get a rough estimate of the condition of the peripheral nerves and record it. Get an accurate estimate of the condition of the circulation in forearm and hand, and record it.

3. Treatment in simple fractures is simple—acute flexion, as a rule. Be careful that the fracture is

reduced before putting it up. Carefully observe the circulation in hand and forearm.

4. Difficult fractures at the elbow, when the joint is involved, when there is much comminuation or displacement, and when there is dislocation, require the utmost of surgical skill in a hospital for good results.

5. In after-treatment, functional use should be allowed and exercise encouraged. Do not actively seek to restore motion by "pump-handle" methods when the stiffness is due to muscle spasm.

Massachusetts General Hospital.

ABSTRACT OF DISCUSSION

DR. JAMES M. HITZROT, New York: Fractures at the lower end of the humerus are less common in adults than in children and the methods of treatment are less satisfactory because there is no definite agreement as to the method of treatment to be followed as there is with children. The elbow is a nonweight-bearing joint, and the essential result desired after injury to this joint is the greatest possible amount of motion, i. e., function. In general, the statement has been that early complete restoration of the anatomic outline of the joint is essential to the restoration of a proper amount of function, and that early motion is undesirable because of the danger of excessive callus formation. I combat this view with the statement that anatomic replacement is of secondary importance; that early active motion is more desirable than the correction of displaced fragments, and furthermore that early active motion does not produce excessive callus, at least for fractures in this location. My experience now covers twenty-five cases treated by the method of suspension, and the results have been far more satisfactory than those obtained by any other method. The method requires patience and courage and is time-consuming; it must be carried out faithfully if it is to be successful, but it is fully worth the trouble.

DR. FRASER B. GURD, Montreal: In these cases, an accurate diagnosis must be made, and notes taken of the condition of the nerves and of the circulation in the forearm and hand. Secondly, if good results are to be obtained, early, immediate reduction must be obtained. The chief difficulty in treating a child suffering from a fracture of the lower end of the humerus is that in order for an accurate diagnosis to be made, valuable time is lost. The swelling about the joint does not, as a rule, take place within the first few minutes after injury. Hours may pass before it becomes sufficiently marked to make it appear probable that the circulation in the forearm and the hand will be jeopardized by the corrected position. If, on the other hand, correction can be carried out immediately, that is, within a half hour, an hour, or an hour and a half, it is usually a simple matter to correct the deformity, and usually it is a safe matter to correct it. Musculospiral or radial nerve injuries are common. Tears of the musculospiral nerve are uncommon. Physiologic paralysis is frequently found. Necessity for repair of the nerve later is a very unusual incident. Physiologic injuries of the ulnar nerve are common, although less common than injuries of the musculospiral. Necessity for operation for repair of the nerve as the result of tear is uncommon. This is not true, however, in the case of operations for transplantation of the nerve as the result of injuries received by the nerve, not during the first year, but more particularly during the tenth and fifteenth years following injury, in those cases particularly in which a valgus deformity at the elbow joint follows. In cases of fractures of the lower end of the humerus, caused by hyperextension at the elbow joint, an injury in which the lower end of the humerus through the olecranon fossa is nipped off by the olecranon process, Dr. Allison said that they are corrected by full flexion. They are held in the corrected position by full flexion. The possibility of full hyperflexion being obtained in these cases is largely dependent on immediate correction. There is, however, the other type of injury in which the displacement is forward as a result of a fall on the elbow. The full flexed position is not only useless but is certain to reproduce the deformity. A right angle position, or slightly more extension than the right angle position, is necessary. We have come to the conclusion that the use of the right angle position, the application of plaster of paris from the axilla to the base of the hand, and the molding through the soft plaster about the bone ends until such time as it is felt that by backward pressure on the lower fragment this point is made to lock, and then is held so manually until the plaster has set, give better results in this or other difficult fractures than other procedures.

[EDITORIAL NOTE.—This paper, together with that of Dr. Osgood, which precedes it, and the papers by Dr. Darrach and Dr. Wilson, to appear next week, constitute a symposium on fractures.]

BASAL TUBERCULOSIS*

KENNON DUNHAM, M.D.
AND
V. V. NORTON, M.D.
CINCINNATI

Our purpose in this paper is to present a series of lesions of pulmonary tuberculosis which differ from the lesions of fibroid apical tuberculosis. These lesions are not fibroid; they very often do not start in the apexes and they do not show the classic fans on a roentgen-ray plate.

Basal tuberculosis is the term under which we have grouped these lesions because it expresses the greatest contrast to apical tuberculosis and because many of these lesions are first found at a base. "Basal tuberculosis" has crept into the literature without any clear pathologic definition. It indicates a pulmonary tuberculous lesion which involves a base before either apex is involved. Fibroid apical tuberculosis differs from basal tuberculosis not only by its location but also by the clinical course and the pathologic anatomy.

This report must be considered as a preliminary study. It is not finished. We have only gross pathologic changes, roentgen-ray studies and clinical evidence from which to draw our conclusions. Serial sections must be studied; further proof must be obtained as to whether these basal lesions are always associated with tuberculosis lesions elsewhere in the body, and more pathologic and clinical material must be accumulated. We will therefore consider this roentgenologic and clinical report, state our observations and suggest rather than draw conclusions.

With us, the pathologic anatomy of these basal lesions is not a finished study. We have observed them for a long time on our roentgen-ray plates and at necropsy. The plates show two different types of lesion: tuberculous caseous bronchopneumonia and tuberculous pneumonia. The former may be so confluent as to simulate the latter. The same type of pathologic condition may involve an upper lobe. Thus, our clinic "Irishly" speaks of a basal type in an upper lobe.

BASAL LESIONS

Two forms of pulmonary tuberculosis are clearly defined and generally understood from their names alone: miliary tuberculosis and apical fibroid tuberculosis. The former we classify as a puerile type, as we do these basal types. The latter is the adult type, and is the most common tuberculous lesion found in the adult. This type generally develops in the upper lobes

* Read before the Section on Radiology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

near the apexes, and is a true lobular pneumonia. These areas appear as fans on a roentgen-ray plate. As repair takes place, the exudate is absorbed, scar tissue is laid down and the scar contracts; new fans develop at a later time and we have fans of different densities. The fibroid apical type when advanced is frequently associated with caseous bronchopneumonia at the base. This is the result of the aspiration of infectious droplets which develop caseous bronchopneumonia within the smaller air tubes and accompanying air cells.

This is not the case with the basal lesions. Sometimes they absorb. Sometimes scar tissue is laid down, but this is not common and we do not expect to find lesions of different densities which indicate differing ages. We expect cavitation. Absorption is the exception, cavitation is the rule and, generally speaking, death soon follows. The usual form of tuberculous caseous bronchopneumonia is secondary to cavities formed in the old fibroid apical lesions. There is no such chance for aspiration in the basal type, and these lesions must be blood borne or be the result of some massive infection through the respiratory tract.

The infection cannot come back through the lymphatics but the lymph nodes could pour it into the blood, and the first capillaries through which it must pass were born of observations made before it was possible to study pathologic changes in the chest by means of the roentgenogram.

The Cincinnati Tuberculosis Sanatorium has 250 beds for open cases of tuberculosis. In this institution, in the last two years, we have had sixty basal cases. Of these, forty-seven or 18.33 per cent, were in negroes, though they represent only 40 per cent of our admissions. All of these sixty cases were carefully proved to be tuberculous. Only two might be questioned. One of these had a history of unusual family exposure with the clinical symptoms and roentgen-ray densities usually found in this type. The other showed on roentgen-ray examination a large hilum node with caseation and calcification, and had a typical history. The other cases were proved positive by positive sputum, by positive animal inoculation or by autopsy. In one, a cervical gland on section was proved to be tuberculous. Three were associated with tuberculous bone or joint lesions. One or more tuberculous lesions were found in other parts of the body in forty-four cases, the most frequent being adenitis, bone and joint lesions, and pleuritis, in the order named.

Because the density on a roentgen-ray plate following hemorrhage is known to resemble caseous bronchopneu-

Fig. 1 (colored woman, aged 27).—Basal pneumonic type: The area at the right base on later films shows three cavities.

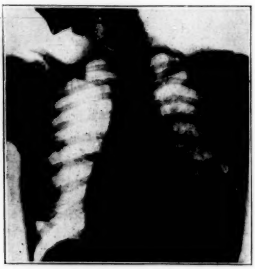

Fig. 2 (colored woman, aged 20).—Basal caseous bronchopneumonic type: Patient died in less than four months; at autopsy, the tracheobronchial glands were found to be entirely caseous.

Fig. 3 (colored man, aged 28).—Film resembles basal tuberculosis; case proved at autopsy to be nontuberculous. Densities are due to bronchopneumonia, the result of aspiration from bronchiectatic cavities.

would be those in the lungs. Also lesions of the genitourinary system, the gastro-intestinal tract and the osseous system may furnish blood borne infection.

Such lesions are frequently associated with these basal types, as all of our nineteen autopsies show. Our clinical studies cannot possibly be so complete, but when we observe basal lesions we immediately start to search for other tuberculous foci. We have not proved that all basal lesions are associated with other foci.

The great practical point is that when a basal lesion is found and it has been diagnosed as tuberculous we believe that the clinician should search diligently for tuberculous lesions in other parts of the body, because we have found such lesions in all of the nineteen autopsies of this series.

INCIDENCE AND TUBERCULOUS NATURE

It is frequently asserted that basal tuberculosis is so uncommon that, for practical purposes, it does not exist. It is also said that râles in the upper half of the chest are indicative of tuberculosis, and râles in the lower half of the chest do not indicate tuberculosis. Our experience disproves both of these contentions, which monia, we discarded five cases in which there was a history of recent hemoptysis.

We have divided these sixty cases into those simulating caseous bronchopneumonia, of which there are forty-nine, and those simulating tuberculous pneumonia, numbering eleven. Of the forty-nine, there were twenty-two cases in the lower lobe and seventeen in the upper lobe. In ten the involvement was so general that it was difficult to say which lobe was first involved. In the eleven of the tuberculous-pneumonic type the condition was reversed, and there were four lower lobes and seven upper lobes primarily involved.

If we disregard the twenty-four cases in the upper lobes and the ten which were of a diffuse character, there still remain twenty-six cases in the lower lobe which would be considered basal by any one—and twenty-six cases in two years in one hospital which has only 250 beds for open cases of tuberculosis disproves the statement that basal tuberculosis is uncommon.

Of these sixty patients, seventeen were of the caseous bronchopneumonic type. Thirty-four died in the hospital, and in nineteen of these autopsy was performed. All showed lesions in other parts of the body, as fol-

lows: adenitis, including both thoracic and abdominal glands, nine; following pleuritis, three; genito-urinary tract, two; enterocolitis, two; following peritonitis, two, and joint, one.

Two additional patients are known to have died after discharge. Eight, five white and three colored, are still in residence. Four, all white, are doing well; three are pneumothorax cases. The three colored patients are at present improving, but we are doubtful in the light of previous experience as to the final result being favorable. The remaining white patient is showing increasing involvement on the "good side." Of nine patients we do not know the present condition; but eight of them were negroes, and all left of their own accord, in such condition that nothing but death is possible. One negro, discharged a month ago, we know is rapidly progressing.

Of six patients outside known to be in fair health, three were associated with bone lesions; one is the patient with the family history of tuberculosis with only a small lung lesion, and two, negroes, are as yet in fair health.

In short, in only eight of the sixty cases have we even any hope for recovery; seven of these patients are white.

A basal lesion is a very virulent type of infection, more common in the negroes, and in that race almost uniformly fatal.

Clinically, these cases have two forms of onset: one acute with high fever simulating pneumonia and the other insidious, more like the ordinary apical variety but running a more rapid course. The acute onset is more common with the pneumonic type, and the insidious onset with the bronchopneumonic type; but this will not always hold with either type of case.

The etiologic diagnosis is very difficult from the history, symptoms, physical observations and roentgen-ray plates. The roentgen-ray plates will suggest the disease, but the accurate diagnosis of basal tuberculosis depends on positive sputum, positive animal inoculation and other definite laboratory proof of tuberculosis.

It is our contention that the only pulmonary tuberculous lesions which can be so diagnosed from the roentgenograms are apical lesions with fans of differing densities.

Basal tuberculous lesions may closely resemble syphilis, bronchiectasis, malignant growths, hemorrhage or unresolved pneumonia.

CONCLUSION

Basal tuberculosis is quite common in the negro and not uncommon in white persons. One of us has spoken of it as the puerile type in the adult because it is like the disease as often found in children.

The roentgen ray affords an excellent way to differentiate these types, but must not be relied on to make an etiologic diagnosis of basal tuberculosis.

Until more is known of the pathogenesis and pathologic anatomy of these lesions, it would be better to call them by their old name "basal tuberculosis," and include under this term the lesions simulating basal tuberculosis found in the upper lobes.

We do know that miliary tuberculosis is generalized. We do know that the fibroid apical type is often localized. We want to know whether further studies will prove that the basal type is a part of a generalized tuberculosis, as our studies suggest.

The pathologic anatomy and the pathogenesis of these lesions have not been definitely described. Further research is necessary for determining whether they are uniformly associated with lesions in other parts of the body.

This is of practical importance, for if it can be proved that this type is uniformly associated with other lesions, we believe that we can conclude that we are dealing with a generalized tuberculosis.

We will then, when we find even a small lesion of this type, protect the patient by careful prolonged treatment and protect ourselves by a very guarded prognosis.

Union Central Life Building—Cincinnati Tuberculosis Sanatorium.

ABSTRACT OF DISCUSSION

DR. H. K. PANCOAST, Philadelphia: Primary basal tuberculosis is frequently diagnosed by the more or less inexperienced, but it is a rare manifestation of the disease. I have seen very few cases of the type mentioned in the paper. There is no disease more difficult to diagnose correctly. It is a primary condition in the lungs, as contrasted with the secondary basal caseous bronchopneumonia so often seen following a lesion in the upper lobe. We cannot, as a rule, diagnose the condition with certainty, especially at first, but we can suspect it and then look for other evidences of the disease elsewhere in the body. In my opinion this condition is in reality an atypical miliary tuberculosis of the base due to blood stream infection, because in nearly all the cases mentioned there were evidences of the disease elsewhere in the body. It differs from what is sometimes called basal tuberculosis originating in the usual way in the apex of the lower lobe, but that is another pathologic entity, and a local one. What Dr. Norton has described is a local manifestation of a generalized condition. The evidences of repeated infections are not found, as they are in the usual haunts of pulmonary tuberculosis, the apexes, where we find early exudations, later evidences of tubercles, fibrosis and new exudative areas, all at the same examination. The process in this condition under discussion is all there from the start and keeps on increasing.

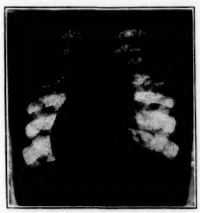

Fig. 4 (colored boy, aged 13).—Patient was admitted with a tuberculous ankle; a guinea-pig inoculated with sputum developed tuberculosis; no definite fans.

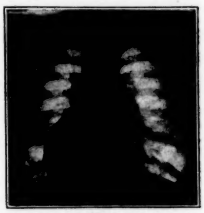

Fig. 5 (seven months later).—Remarkable clearing; bone lesion healed.

DR. KENNON DUNHAM, Cincinnati: One of the reasons we have had such a large percentage of basal cases occurring in the sanatoriums is our large colored population. About 40 per cent of our patients are colored. Well-to-do white persons can afford to pay for roentgen-ray examination and they are more likely to come to one's office. The diagnosis is a difficult one. The accurate differentiation does not depend alone on the roentgenogram; there must be also examination of the sputum or of a lymph node, and even inoculation into guinea-pigs.

DR. V. V. NORTON, Cincinnati: I am sorry that I do not have time to present the slides to illustrate the varieties of this lesion, mentioned in the paper. They also would demonstrate the impossibility of a diagnosis by the roentgenogram alone, as densities due to hemorrhage, carcinoma, sarcoma and bronchiectasis may be very similar to those of basal tuberculosis.

KALA-AZAR

DEMONSTRATION OF LEISHMANIA DONOVANI IN THE SKIN AND SUBCUTANEOUS TISSUE OF PATIENTS: POSSIBLE RELATION TO THE TRANSMISSION OF THE DISEASE *

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AND
C. H. HU, M.D.
PEKING, CHINA

Though kala-azar often devastates large territories in certain parts of the world in which it is constantly present, and though it has been subjected to numerous investigations, all attempts to transmit the disease to animals by natural means have been in vain. Only one really suitable experimental animal, a hamster, *Cricetulus griseus,* a variety of Chinese field mouse, has been found, and even this animal is said to contract kala-azar only when Leishman-Donovan bodies are injected directly into the peritoneal cavity or subcutaneous tissue, though many attempts have been made to transmit the disease from animal to animal by means of various biting insects.

Fig. 1.—General character of lesion: The areas in which Leishman-Donovan bodies are present are indicated by large black dots. The dots, which have purposely been made few so as not to obscure too much of the lesions, indicate only the relative number of parasites in the different levels of the skin.

In a series of recent experiments [1] performed on this variety of hamster, we have brought forward what we think to be sound evidence showing that it is only within the cells of the reticuloendothelial system that the parasites of kala-azar are found, and that it is these cells filled with Leishman-Donovan bodies that form the characteristic lesions of the disease. The clasmatocytes (phagocytic wandering cells) of the skin, subcutaneous and areolar tissues, which are members of this so-called system of cells, were accordingly found to be tremendously increased in number and filled with kala-azar bodies. These parasitized cells really form a thick layer of heavily infected tissue covering each animal, though no changes can be seen on the external surface of the body after the hair has been removed.

This finding naturally led to a thorough review of the autopsy material from our human cases of kala-azar, in all of which studies of the skin had not been made. Our series consists of eight cases in which characteristic lesions with Leishman-Donovan bodies were demonstrated in the tissues or the disease produced in hamsters by intraperitoneal inoculation. From six of these cases no skin or subcutaneous tissue was removed, but from one of the remaining two we have found a small piece of skin, and from the other some subcutaneous tissue taken from an area of hemorrhage. Sections made from two of these specimens

Fig. 2.—Clasmatocytes containing Leishman-Donovan bodies near sweat gland; × 650.

show great numbers of clasmatocytes filled with Leishman-Donovan bodies just as we have found in all our experimental animals. Typical, advanced lesions of kala-azar were found throughout the viscera in both of the cases in which these observations were made. As figure 1 shows, all levels of the skin below the epidermis contain these infected cells. They are collected in large masses about the sweat glands and arterioles and are scattered diffusely throughout the corium, extending even into the papillae just below the epidermis. These lesions are qualitatively similar to those seen in oriental sore or the cutaneous form of kala-azar produced by *Leishmania tropica,* and, though much less extensive, establish a closer relationship between these two diseases.

Fig. 3. — Perivascular arrangement of clasmatocytes filled with Leishman-Donovan bodies in superficial part of corium; × 650.

The skin in kala-azar is not characteristically altered, but often shows areas of brownish pigmentation. This change does not appear to have been well studied histologically. We do not have accurate information regarding the gross appearance of the skin from which the preparations illustrated in this report were made, nor do we know from what part of the body the specimen was taken. A note on the patient's history

* From the Department of Pathology of the Peking Union Medical College.

1. Hu, C. H., and Cash, J. R.: Proc. Soc. Exper. Biol. & Med. **24**: 469, number 6, 1927.

does, however, describe small, brownish, slightly elevated areas on the arms, shoulders and knees. The sections do not show any increase of cutaneous pigment, but the number of parasitized clasmatocytes is so great that one should expect to find some change in the gross appearance of such an area of skin.

The observations of such large numbers of Leishman-Donovan bodies in the skin and subcutaneous tissue reveals the first reasonable source from which the infection may be transmitted from one individual to another. Owing to the perivascular arrangement of the cells containing kala-azar bodies (fig. 3), it is very likely that a blood-sucking insect would become contaminated with the parasite. These observations also render it questionable whether many of the kala-azar bodies described in the peripheral blood really existed there, or whether they escaped from the wound in the skin along with the blood. We have had no experience with human cases regarding this point, but are still of the opinion that in our animals a few parasites exist in the peripheral blood, for the small number seen in blood films are generally found within the polymorphonuclear neutrophilic leukocytes.

From our studies based on two cases of kala-azar we can only say that in both instances Leishman-Donovan bodies were found in great numbers in the superficial tissues of the body—in one case the skin, and in the other the subcutaneous tissue. These changes are identical with those occurring constantly in our experimental animals, in which the changes produced by kala-azar in the other organs parallel those seen in human cases. If lesions such as these are found to be present regularly in kala-azar, histologic study of the skin may be used as a diagnostic procedure instead of splenic puncture.

BLUEBERRY LEAF EXTRACT

PHYSIOLOGIC AND CLINICAL PROPERTIES IN RELATION TO CARBOHYDRATE METABOLISM *

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MORRISTOWN, N. J.

Innumerable vegetable substances, often in the form of powders or teas made from green plants, have been used as popular remedies for diabetes throughout the world. As one example, eucalyptus leaf tea attracted so much notice in some regions that it was investigated at the Physiatric Institute at the special request of the National Research Council, with negative results.[1] In 1925, Professor Durig of the University of Vienna became impressed with the benefits of blueberry leaf tea as used for diabetes among the Alpine peasantry [2] to such an extent that he suggested an investigation of the question by Dr. Richard I. Wagner, a chemist in his laboratory. Brief summaries of the results of physiologic experiments were published by Dr. Wagner in collaboration with Mark,[3] and of clinical observations in collaboration with Mark and Eppinger.[4] The blueberry leaf tea showed distinct but variable influence on the alimentary hyperglycemia of dogs. Dr. Wagner was able to explain the variable results by demonstrating the existence of two antagonistic ingredients in the leaves, one tending to raise and the other to lower the blood sugar. The latter substance was partially purified and was given the name myrtillin, because obtained from the myrtle family of plants. Myrtillin was found to reduce alimentary glycosuria and hyperglycemia in normal dogs, to reduce glycosuria and prolong life in depancreatized dogs, and to reduce or abolish glycosuria in diabetic patients. Somewhat similar observations with nettle leaves were later reported by Marx and Adler.[5]

The method of preparing myrtillin, and also the results of animal experiments performed in collaboration by Dr. Wagner and myself, were described in papers before the Federation of American Societies for Experimental Biology in Rochester, N. Y., last month. In addition, a brief outline of the clinical observations was presented a week ago before the Association of American Physicians. Fuller publications will appear in the *Journal of Metabolic Research*. It is impossible to recapitulate all the details in one brief paper, but a general idea may be conveyed by the summary presented here.

PROPERTIES OF MYRTILLIN

Occurrence.—Myrtillin occurs in all green plants. The leaves of the blueberry and various myrtles have their advantage in the relative abundance and ease of separation of the myrtillin, but it is possible that other plants will ultimately be the source of commercial production. Myrtillin has also been found by Dr. Wagner in yeasts and bacteria and in oatmeal, but not in other grains or in fruits. It was twice obtained in traces from dog livers, but in general the question of its existence in animal organs cannot be answered because of the practical impossibility of separating it from such quantities of proteins.

Preparation.—The fresh green leaves are air dried, then extracted for several hours at 70 C. with about 50 per cent alcohol slightly acidified with hydrochloric or sulphuric acid. This liquid is strained off, and 95 per cent alcohol is added to it in sufficient quantity for the precipitation and removal of the proteins present. Gradual addition of a 20 per cent aqueous solution of ammonium sulphate to the clear alcoholic liquid then produces a flocculent precipitate, which carries down the myrtillin with it. The supernatant fluid contains the sugar-raising principle of the leaves. The myrtillin is collected by filtration or centrifugalization, and can be purified slightly further if desired.

Properties.—Myrtillin thus obtained is a grayish or brownish amorphous substance, not chemically pure. It has not as yet been possible to isolate or identify the true active substance. In water or dilute alcohol it forms a slightly turbid colloid solution. Acid favors solution; alkali causes a gelatinous precipitation. It is insoluble in absolute alcohol, ether, benzene and other fat solvents. It has a rather high resistance to heat.

Nature.—It seems a plausible assumption that the two substances found in the leaves represent opposed factors in the carbohydrate metabolism of plants, myrtillin being the anabolic factor, and the sugar-raising principle

* From the Physiatric Institute.
* Read before the Section on Pathology and Physiology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

1. John, H. J.: A Trial of Eucalyptus Infusion in Diabetes, J. Metab. Research **1**: 489-494 (April) 1922.

2. Within the last few months I have received letters indicating that blueberry leaf tea has had some repute as a diabetic remedy in some rural regions of the United States, and three diabetic patients assert that they were benefited by it.

3. Mark, R. E., and Wagner, R. I.: Klin. Wchnschr. **4**: 1692-1693 (Aug. 27) 1925.

4. Eppinger, H.; Mark, R. E., and Wagner, R. I.: Klin. Wchnschr. **4**: 1870-1871 (Sept. 24) 1925.

5. Marx, A. V., and Adler, E.: Arch. f. exper. path. u. Pharmakol. **112**: 29-38, 1926.

the catabolic factor. Hypothetically at least, either or both of these substances may be postulated as being present and taking part in the metabolism in animal protoplasm. Myrtillin is entirely different, both chemically and physiologically, from insulin and all insulin-like substances heretofore obtained from vegetable or other sources. It may possibly rank among the vitamins, but this question cannot be definitely answered as yet.

Dosage.—The empiric dose of myrtillin for dogs or patients is 1 Gm. a day. The effect is perceptibly less if the dose is reduced below 0.3 Gm. a day. On the other hand, an increased effect is not obtained with doses as high as 20 Gm. daily. Further, even the largest doses are nontoxic, as any slight indigestion or diarrhea may be attributed to the mineral salts present as impurities. The vegetable origin and these peculiarities of dosage are reasons for suggesting the possible vitamin nature of myrtillin. It appears to be equally effective when administered intravenously or orally. In the latter method it is given on an empty stomach and at least one hour is allowed for absorption before food is taken, as the absorption may be prevented if myrtillin is mixed with food, especially protein.

Effect in the Normal Organism.—Myrtillin does not appreciably change the normal fasting blood sugar, and never causes hypoglycemia. Its characteristic effect is a reduction or complete suppression of the hyperglycemia following the administration of large quantities of dextrose to dogs or human beings. For this purpose 1 Gm. of myrtillin may be given on a fasting stomach, and the dextrose swallowed one or more hours later. The effect is not a mere alteration of absorption, for it is obtained when the myrtillin is given orally and the dextrose intravenously, or vice versa. Myrtillin also diminishes the hyperglycemia and glycosuria from epinephrine. Myrtillin is evidently stored in the body, for these effects can be demonstrated in gradually decreasing degrees through from one to several weeks after a single dose. In this point of storage, therefore, there is another resemblance to a vitamin. The depression of hyperglycemia by myrtillin has not been demonstrable in rats or rabbits, and it has not been possible up to the present to explain the differences between species by differences in diet.

Effect in Totally Depancreatized Dogs.—The survival after total pancreatectomy is typically about a week or less, seldom a few days more. The extremely severe diabetes and attendant cachexia are familiar, and the D:N ratios approach 2.8 unless lowered by general prostration. Digestion is very poor even if pancreas preparations are fed. The failure of wound healing is characteristic. When any of these results are absent, as, for example, when the animal heals his wounds and survives several weeks, there is reason to believe that the operation was incomplete or that accessory pancreatic tissue was present. Myrtillin administered in the dosage mentioned radically changes these conditions. The shortest duration of life in our series was twenty-four days, the longest sixty days, the average from four to five weeks. Instead of cachexia, the strength and liveliness of the animals is noticeable; they are ready to play or to fight. With the aid of a pancreas preparation the digestion is satisfactory, and in the best instances the small, solid, black feces are indistinguishable from the normal. The wound healing is especially remarkable, being fully as quick and perfect as in normal animals. On a mixed diet of milk, bread and finely ground meat, hyperglycemia is less than ordinary (usually from 200 to 300 mg. per hundred cubic centimeters), and glycosuria is low. D:N ratios do not exist because the sugar output is much lower than the starch intake. Glycogen is abundant in the liver (3 or 4 per cent), and is not above normal values in the heart muscle. The body weight, after an initial fall, is well maintained until a few days before death. The sugar then rises sharply in blood and urine, and rapid cachexia ensues. Insulin will still save the animal if administered in time, but not at the extreme end. The question whether the insulin requirement is reduced by the use of myrtillin is hard to answer because it is hard to determine the requirement accurately in totally depancreatized dogs. Our experiments to date indicate that myrtillin tends to stabilize the blood sugar, which otherwise fluctuates widely, and that it spares insulin, especially when the blood sugar is used as a standard.

Effect in Partially Depancreatized Dogs.—Removal of nine tenths of the pancreas leads to severe diabetes. As increasing proportions of pancreas are removed, the diabetes becomes more severe and hopeless. After leaving such a small remnant as one fiftieth of the pancreas about the main duct, we have been able with myrtillin to keep dogs in good condition indefinitely on a mixed diet of meat and bread, without artificial aid to digestion, with sugar-free urine and blood sugar never above normal. It may be emphasized that ordinarily such an operation is just as surely fatal as total pancreatectomy, only more slowly, and that the effect of myrtillin in such instances is an actual cure. In the cured cases the pancreas remnant has been found greatly hypertrophied, up to ten times its original size; but as equal hypertrophy has sometimes been obtained without myrtillin (and without cure), it is not yet certain whether regeneration of either acinous or insular tissue of the pancreas is stimulated by myrtillin.

Effects in Patients.—I am able to report on eighty-one cases of diabetes treated with myrtillin up to this time. The effects in patients do not seem to be as prompt and usually not as powerful as in dogs. A week, or perhaps a longer time may be required before the full action of the myrtillin is manifest. The prolonged duration of myrtillin influence, apparently due to its storage in the body, has already been mentioned. These two factors, namely, the gradual beginning and the gradual wearing off of the effects of myrtillin, tend to make accurate studies difficult except in a few specially favorable cases. We consider it inadvisable to give myrtillin to patients with unchecked glycosuria and await a reduction of the sugar. The slow and mild action of the myrtillin will thus often be made ineffectual, and an unnecessary number of failures will result. It is best to use diet restriction and, if necessary, insulin to stop glycosuria and bring the blood sugar to normal, and then to begin with myrtillin and look for the results in a gradual rise of tolerance or a gradual diminution or disappearance of the need for insulin.

Of the eighty-one cases mentioned, twenty-one must be excluded from consideration because of uncertainty. A few of these patients developed slight infections, and experience has shown that in the presence of infection myrtillin does not prevent a rise of sugar, and only insulin is effective. In a few other cases there were irregularities of diet or other difficulties. The reason for excluding most of the cases, however, is insufficient length of observation. As the tolerance of patients is subject to change, and as it frequently rises merely with continued control of the sugar by diet or insulin, the only cases from which any trustworthy conclusions can be drawn are those which have been approximately sta-

tionary under exact control for an adequate period before the test.

There are left, therefore, sixty cases in which the food tolerance or the insulin requirement had been standardized with sufficient accuracy for one year (usually two years or more) before myrtillin was tried. Of these, we have classed twenty-four as failures, because the use of myrtillin for two months or longer did not perceptibly change the tolerance or the insulin requirement. In the remaining thirty-six cases the myrtillin was believed to be beneficial, because it became possible rather quickly to make an increase of diet or a decrease of insulin or both. The mere decrease of insulin, ranging in extent from 6 to 28 units, was welcome to the patients because it often permitted a reduction of the number of injections. The complete stopping of insulin was possible only in six cases. It must be understood that these cases had positively required insulin for one or more years, without any recent signs of a diminishing requirement. The dosage in such cases ranged from 18 units up to a maximum of 54 units, and the ability to withdraw such quantities of insulin either quickly or slowly appeared to afford the strongest evidence of the clinical value of myrtillin.

It was previously mentioned that myrtillin never causes hypoglycemia, and that it tends to stabilize the blood sugar in experimental dogs. This stabilizing influence appears in many patients, and is especially valuable for certain patients with diabetes, particularly children, who have been subject to troublesome hypoglycemic attacks from insulin. In several children myrtillin has either reduced such attacks in number and severity or prevented them completely. Sometimes the character of the attack has been changed and the onset made slow instead of sudden, so that plenty of time has become available for giving carbohydrate. In any case, a sufficiently great excess of insulin will still produce a violent attack in spite of myrtillin. In some cases, also, this stabilizing action of myrtillin is lacking.

TABLE 1.—*Use of Myrtillin in a Case Newly Under Treatment* *

	Diet			Urine		Blood		Insulin, Units	Myrtillin, Gm.	Weight, Pounds
Date, 1926	Protein	Carbohydrate	Calories	Sugar	Ac.	Sugar	Time			
11/21	60	80	1,000	+++	+	242	7 a.m.	34	—	147
12/ 1	60	80	1,000	++	±	180	7 a.m.	44	—	147
12/ 5	60	80	1,000	++	0	122	7 a.m.	46	—	146
12/ 9	60	80	1,000	0	0	139	7 a.m.	48	—	144
12/14	60	80	1,000	0	+	105	7 a.m.	48	—	143
12/15	Started myrtillin									
12/18	60	80	1,000	0	0	107	7 a.m.	40	1	143
12/31	60	80	1,000	0	0	90	1 p.m.	34		
1927										
1/14	60	80	1,000	0	0	106	1 p.m.	28	1	144
1/29	60	80	1,000	0	0	111	¾ p.m.	20	1	141
2/11	60	80	1,000	0	0	107	1 p.m.	10	1	141
2/25	60	80	1,000	0	0	113	1¼ p.m.	6	1	139
3/18	60	80	1,200	0	0	93	1 p.m.	4	1	140
3/25	Stopped insulin			..	..	...	.....	—	1	
3/28	60	80	1,200	0	0	112	1 p.m.	—	1	138
4/ 8	60	80	1,400	0	0	98	1 p.m.	—	1	140
5/ 9	60	80	1,600	0	0	106	2 p.m.	—	1	139

* The patient was a woman, aged 44. The reduction of insulin often occurs much more slowly than here.

No reason is known for the success of myrtillin in some cases and its failure in other cases. It is uncertain what period of trial is proper before accepting failure. In one child with particularly severe diabetes, the usual two-month period did not bring a reduction of insulin, but continuance of the myrtillin was requested because of the nearly complete freedom from the previous hypoglycemic attacks. Now, after a year, it has become possible to reduce the insulin from about 50 units to about 30, although such an improvement had not been obtained in the five preceding years of treatment with diet and insulin. In general, results are best in the mildest cases, poorest in children, and best in the middle aged or elderly. This fact seems to correspond to the far better effects of myrtillin in partially as compared with totally depancreatized dogs, and might indicate that the presence of a certain amount of healthy pancreatic

TABLE 2.—*Effect of Myrtillin in Decreasing Insulin Dosage* *

	Diet			Urine		Blood		Insulin, Units	Myrtillin, Gm.	Weight, Pounds
Date, 1924	Protein	Carbohydrate	Calories	Sugar	Ac.	Sugar	Time			
8/13	90	100	1,500	++	+	199	7 a.m.	30	—	125
8/23	90	100	2,000	—	—	200	7 a.m.	30	—	125
1925										
6/24	90	100	2,000	0	0	157	7 a.m.	34	—	131
7/ 3	90	100	2,000	0	0	125	7 a.m.	34	—	130
1926										
6/28	90	100	2,200	0	0	150	7 a.m.	34	—	142
7/ 5	90	100	2,200	0	0	160	7 a.m.	40	—	142
9/22	90	100	2,200	—	—	Started myrtillin		..	1	144
9/26	90	100	2,200	0	±	175	7 a.m.	40	1	144
10/ 1	90	100	2,200	0	±	90	7 a.m.	35	1	145
10/ 5	90	100	2,200	0	0	55	7 a.m.	25	1	144†
10/ 9	90	100	2,200	0	0	92	7 a.m.	10	1	—
10/11	90	100	2,200	0	0	156	7 a.m.	10	1	—
10/15	90	100	2,200	0	0	200	7 a.m.	10	1	145
10/17	..	...	.....	..	..	...	.....	12	1	—
10/20	90	100	2,200	++	0	146	7 a.m.	16	1	144
10/25	90	100	2,200	++	0	118	7 a.m.	16	1	—
10/31	90	100	2,200	0	0	85	7 a.m.	14	1	144
11/ 5	90	100	2,200	0	0	112	7 a.m.	14	1	—
1927										
3/ 6	90	100	2,200	0	0	95	.....	14	1	151

* The patient was a youth, aged 18 years. With myrtillin it was possible to reduce insulin from 40 to 14 units, but 10 or 12 units was not enough. The body weight increased.
† No symptoms of hypoglycemia.

tissue is the deciding factor. There is, however, no infallible clinical rule, for a number of failures have occurred in elderly patients and occasionally an excellent result has been obtained in the young, as, for example, a boy whose insulin requirement was reduced from 40 units to 14 units a day. Trial in each individual case seems to be the only way to decide.

The benefit of myrtillin, when obtained, is indefinite in duration. Changes are not observed when myrtillin is omitted, accidentally or intentionally, for a few doses or a few days. The continuance of the effect for from one to several weeks is readily explained by storage in the body, as already mentioned. Thereafter some patients show more or less return of the sugar in blood and urine, requiring resumption of myrtillin. Others seem to resemble the partially depancreatized dogs, in that after a variable period of treatment they are able to stop the use of myrtillin without losing their high tolerance. Though the effect of myrtillin is thus more persistent than that of former diabetic treatment, we advise most patients at present to continue taking it indefinitely, in the hope that prolonged or cumulative benefits may thus be obtained.

In addition to the recapitulation of the animal experiments, the accompanying tables will illustrate some of the results found in cases in human beings.

SUMMARY

Myrtillin, a substance of unknown nature and composition, supposedly has a physiologic function in the normal carbohydrate metabolism of plants and perhaps of animals. It is not insulin or a substitute for insulin, but it exerts some positive and easily demonstrable influences in normal and depancreatized dogs. Animal experiments probably constitute the most rigorous objective test that can be applied to a diabetic remedy, and I believe that the striking and uniform benefits in

diabetic dogs justify the trial of myrtillin in human beings. The advantages of myrtillin are that it can be taken by mouth, it is harmless under all conditions, and instead of causing hypoglycemia it tends rather to prevent it. These are qualities which will appeal strongly to patients and also to physicians; and another advantage for the general practitioner is that most of the cases treated by him belong in the milder group which, on the whole, react most favorably to myrtillin. There are, however, the disadvantages that myrtillin in general is feeble and uncertain as compared with insulin. It is useless against acidosis or infections, and it should not be given to glycosuric patients in the expectation of seeing the sugar clear up as it does under such a powerful agency as insulin. It is best to abolish glycosuria and hyperglycemia by the necessary preliminary measures, and then to give myrtillin as a means of gradually raising tolerance or reducing insulin. A considerable proportion of failures must be expected, especially in the severest cases and in young patients. The favorable results, when obtained, are more lasting and tend more in the direction of cure than those of any method heretofore known under any diabetic treatment. Exceptional patients have been relieved of insulin dosage ranging above 50 units daily, and have also discontinued weighing their diet. As a rule, only smaller degrees of benefit are to be expected, and exaggerated hopes should be discouraged. My belief, after two years of investigation, is that myrtillin plays some accessory part in carbohydrate metabolism, and that if properly used it will prove valuable as an accessory factor in diabetic treatment.

TABLE 3.—*Reduction of Insulin Dosage Through Myrtillin* *

	Diet			Urine		Blood		Insulin, Units	Myrtillin, Gm.	Weight, Pounds
Date, 1926	Protein	Carbohydrate	Calories	Sugar	Ac.	Sugar	Time			
3/27	60	60	1,200	+++	++	199	7 a.m.	40	—	146
						240	1 p.m.			
4/ 5	60	60	1,200	+	++	118	7 a.m.	46	—	
4/30	80	90	2,000	0	+	156	7 a.m.	54	—	143
5/ 4	100	100	2,200	0	+	108	7 a.m.	54	—	144
6/25	100	100	2,300	0	0	125	7 a.m.	52	—	150
7/16	100	100	2,200	0	0	106	7 a.m.	50	—	149
7/17	100	100	2,200	0	0	88	7 a.m.	52	—	
	100	100	2,300					54		
8/..	100	100	.....	..	..	...	.....	54	—	
9/..	...	...	.....	..	..	...	.....	54	—	
10/12	100	100	2,300	0	0	186	2 p.m.	54	—	149
10/15	Started myrtillin			..	..	...	.....	54	1	
10/26	100	100	2,300	0	0	50	11 a.m.	40	1	152†
11/ 5	100	100	2,300	0	0	143	2 p.m.	36	1	153‡
11/19	100	100	2,300	0	0	88	3 p.m.	28	1	154
12/ 5	100	100	2,300	0	0	135	2 p.m.	28	1	154
12/19	100	100	2,300	0	0	104	2 p.m.	24	1	
12/28	100	100	2,300	0	0	118	3 p.m.	20	1	154
1927										
1/ 8	100	100	2,300	0	0	114	2 p.m.	15	1	154
1/22	100	100	2,300	0	0	91	1 p.m.	10	1	153
2/ 5	100	100	2,300	0	0	121	2 p.m.	6	1	154
2/18	100	100	2,300	0	0	104	1½ p.m.	6	1	154
3/11	100	100	2,300	0	0	121	2 p.m.	6	1	154
3/25	100	100	2,300	0	0	129	2 p.m.	6	1	155
3/26	100	80	2,300	Stopped insulin			.....	—	1	
4/ 1	100	80	2,300	0	0	115	2 p.m.	—	1	154
4/15	100	80	2,300	0	0	146	1 p.m.	—	1	155
5/13	100	100	2,300	0	0	106	2 p.m.	—	1	156

* The patient was a man, aged 51. Myrtillin enabled him to reduce insulin gradually from 54 units to zero. The diet was not changed except for a brief period from April 1 to May 13, 1927. The body weight increased.

† No symptoms of hypoglycemia.

‡ Cold.

ABSTRACT OF DISCUSSION

DR. J. F. ANDERSON, New Brunswick, N. J.: We have given doses as large as fifty times the normal for a normal animal and did not note any toxic effects, thus showing the difference from the glucokinin of Collip, which manifests its toxic properties after a certain time. We found that the effect of a single dose in dogs persists for as long as two weeks, and perhaps longer. The great readiness with which wounds heal in totally depancreatized dogs which are under treatment with this active principle alone is notable. We have had sixteen patients under observation, the majority of whom were being treated with insulin. Some received as high as 90 units of insulin a day. Two of these sixteen patients apparently did not derive any benefit from the administration of gram doses of this active principle daily. The other fourteen cases showed benefits of varying degrees. I recall particularly two cases, one in a woman who two years ago almost died of diabetic coma. Since then she has required not less than 60 units of insulin a day on a somewhat restricted diet. At times she has had some sugar in the urine and the blood sugar has been somewhat above the normal curve. It was found possible after three weeks' administration of 1 Gm. a day of myrtillin on the same diet, to reduce her insulin requirements to 30 units of insulin a day, and for the past three months this woman has never received more than 20 units of insulin a day, whereas she was previously requiring 60 units daily. It is a very interesting fact, however, that during this period, when she was on this low dose of insulin and was taking the myrtillin, she developed influenza and her need for insulin became marked. She received higher doses than she had been receiving previously, before being put on the myrtillin treatment, but when she recovered, it was possible again to reduce her insulin requirements to 20 units a day. Another patient was requiring 90 units of insulin a day. This patient for the past two months has been able, on the same diet, to do a moderate amount of household work, and has been perfectly comfortable on 30 units of insulin a day. Four or five patients were not on insulin treatment but were on a somewhat restricted diet. It was possible after the administration of myrtillin, for two or three weeks, to increase the diet of these patients, and there was at the same time a disappearance of general symptoms.

J. A. MORRELL, New Brunswick, N. J.: We have been interested in making some animal experimentations and have been able to confirm most of the things that have been reported by Dr. Allen; namely, the lowering of the dextrose curve following ingestion of dextrose and myrtillin in normal dogs, and the prolongation of life in a series of twelve totally depancreatized dogs from twenty-one to a maximum of sixty days. The most interesting experiment we have to report concerns a group of eight totally depancreatized dogs in which we obtained the insulin age over a period of ten or twelve weeks before we fed any myrtillin whatever. We divided that group into two groups of four dogs each. To one group we gave 1 Gm. of myrtillin daily for a period of eight days and then introduced a cut in the insulin dosage. We were able, in a series of two cuts, to bring the insulin requirement down to 50 per cent of the original requirement. In our control group of four dogs, we were not able to make more than a 20 per cent cut and that cut was not very satisfactory. The controls had a much higher blood sugar level and showed a weakened and poorer general condition. Those dogs on the myrtillin with a 50 per cent cut in the insulin dosage showed a slight increase over their previous blood sugar levels but they were in very good shape and very active, and I think that possibly their appearance and activities were improved over that which they manifested when on insulin alone. We realize that this group of four dogs on myrtillin and four on insulin is extremely small; it is only preliminary to a much larger series which is now being investigated.

DR. J. W. SHERRILL, La Jolla, Calif.: The work which I have done with myrtillin has been confined entirely to depancreatized dogs. We have had the material only a very few weeks and our supply has been rather limited. There is no question that there are a number of substances which will lower blood sugar, and as time goes by we shall find many agents which will be of value in the treatment of diabetes. We are very much struck by the fact that the effect of myrtillin is most inconstant. We certainly feel that it has a place, and that it has an action in some cases. We have removed the pancreas totally in about twelve dogs, and we have proved at autopsy that the pancreas was removed. One of these animals lived forty days. This dog was given 1 Gm. a day.

He was able to get his diet up to 300 Gm. of lean meat, 75 Gm. of bread, and 300 cc. of milk. At the autopsy we were unable to find any pancreatic tissue, or supernumerary pancreas tissue. Three dogs lived three weeks and four dogs lived two weeks. We have several that are still under observation. We have not used myrtillin on human beings at all. Myrtillin, when given with dextrose, lowers the blood sugar more than when it is not given in the dextrose tolerance test. It has not changed the normal blood sugar and does not produce hyperglycemia. One very striking thing is the fact that the wound heals. We all know the catastrophes that follow in totally depancreatized dogs when insulin is not used. We know there is a great deficiency of wound healing, but the wounds have healed and there has been no evidence of hernia or infection at the site of operation. There are a lot of things about the use of myrtillin that are discouraging. One is that we are not able to free the urine entirely of sugar in these dogs. Very small amounts are present, usually from 2 to 8 Gm. in twenty-four hours, depending, of course, on the carbohydrate intake, and there is always moderate hyperglycemia. We were unable to give any reason for the success or failure of the experiment in these animals. We do not know the nature of the substance but are merely guessing at it.

DR. FREDERICK M. ALLEN, Morristown, N. J.: To propose a new remedy for diabetes is one of the riskiest things a person can do. I hesitated in announcing it, but the results in animals seemed to be beyond question, and these two laboratories which have been cited are not the only ones in which this work has been confirmed.

MALTA FEVER

WITH ESPECIAL REFERENCE TO THE PHOENIX, ARIZ., EPIDEMIC OF 1922 *

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In the summer of 1922 there occurred in Phoenix, Ariz., the first epidemic of Malta fever that has so far been recorded in the United States, and an excellent opportunity was afforded for studying the disease from several angles. It will be impossible, however, in the space allotted to present other than a brief account.

Historically, Malta fever dates back to Hippocrates, who gave convincing case reports. Its manifestations were described by Burnett in 1814 under the name of remittent malarial fever, and this view of the disease was held until 1878, when British medical officers drew a clear distinction between the two conditions. The specific organism was discovered in 1887 by Bruce, in honor of whom it is now named *Brucella melitensis*. The agglutination method of diagnosis was introduced by Wright and Semple in 1897. A commission of the Royal Society of London made a very comprehensive study of the disease in Malta, from 1904 to 1907, during which goats were proved to be the natural reservoir of infection.

There are many excellent clinical descriptions of Malta fever in the medical literature, and we will mention only the outstanding features in order to fix them in mind. For the basic accounts, all credit is due to medical officers of the British army and navy, particularly Bruce, Eyre, Hughes and Basset-Smith.

Bruce has defined Malta fever as "a disease of long duration, characterized clinically by continued fever, profuse perspiration, constipation, frequent relapses, rheumatic or neuralgic pains, swelling of joints or orchitis; bacteriologically by the presence in the blood and organs of *Micrococcus melitensis* (now *Brucella melitensis*); anatomically by congestion of the spleen and other organs."

The wavelike type of fever, when present, is highly characteristic, and it is from this feature that British writers designate the disease "undulant fever." In many cases, however, the only characteristic feature of the fever is its long duration and marked irregularity. Perspiration may be marked, with drenching night sweats, one of the older names for the disease being febris sudoralis. Constipation is frequently obstinate. Involvement of the joints is one of the cardinal symptoms, though this may be of varying degree, from fleeting pains to a more or less chronic arthritis involving many joints. Blood changes are constant, with secondary anemia, leukopenia and a marked increase in the percentage of mononuclear leukocytes. Clinically, the course may be acute, subacute, chronic or ambulant.

The source of the infection has been regarded as the milk of the goat, contact with goats or, in some cases probably, the urine through the corral dust. Recently it has been shown, however, that *Brucella melitensis*, variety *abortus*, from cattle and hogs, may also cause the disease. The mode of entrance, like typhoid, is through the intestinal tract with subsequent invasion of the blood stream.

The disease must be differentiated from typhoid, malaria, arthritis, septicemia and, occasionally, from tularemia, pneumonia and other febrile conditions. When Malta fever is once suspected, the diagnosis usually is easy through the agglutination reaction, which, as a rule, is positive early in the disease. Blood cultures can also frequently be obtained if taken at the proper time and under suitable conditions; they make the diagnosis certain in some doubtful cases in which the agglutination reaction is very weak.

The first case of Malta fever recognized as contracted in the United States was reported by Craig in 1905,[1] and he then predicted that the disease would be found in many sections of this country.

In 1911, Gentry and Ferenbaugh [2] described their investigations of a disease among the goat herders of Texas, which they proved to be Malta fever. They stated that physicians of the Southwest had for twenty-five years been observing Malta fever under various names, such as "slow fever," "Rio Grande fever" and "mountain fever."

Following the papers of Gentry and Ferenbaugh, the superintendent of public health of Arizona (Dr. E. S. Godfrey) made the disease reportable, and sent a warning to all physicians of that state to be on the lookout for its occurrence, especially among the goat herders, of whom there are a considerable number attending the quarter million goats grazing in the ranges of the state.

In 1912, Yount and Looney [3] of Prescott, Ariz., reported five cases showing the clinical symptoms of Malta fever, confirmed by laboratory tests. During the

* Owing to lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the authors' reprints.

* Read before the Section on Practice of Medicine at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. Craig, C. F.: The Symptomatology and Diagnosis of Malta Fever, with the Report of Additional Cases, Internat. Clin. **4**: 89-115, 1903.
2. Gentry, E. R., and Ferenbaugh, T. L.: Endemic Malta Fever in Texas, J. A. M. A. **57**: 889 (Sept. 9) 1911; **57**: 1045 (Sept. 23) 1911; **57**: 1127 (Sept. 30) 1911.
3. Yount, C. E., and Looney, R. N.: Malta Fever in Arizona, with a Preliminary Report of Cases, South. Calif. Pract. **27**: 257, 1912.

next ten years, several additional cases were reported from Arizona, always arising from contact with goats. In spite of the known presence of Malta fever in the state, goats were brought to Phoenix from the ranges in April, 1922, and pastured near one of the principal dairies, and distribution of raw goat's milk was begun in the city, apparently without serious thought of the danger from Malta fever.

During May and June, a number of cases of an unknown febrile condition were observed by physicians of Phoenix, in which various diagnoses were made, such as typhoid, paratyphoid, malaria, rheumatic fever, septicemia and influenza. Finally one of the local physicians suggested the possibility of Malta fever in a patient who had been under treatment for several weeks with a diagnosis of typhoid. On July 6, the Pathological Laboratory, using an old emulsion made from a culture obtained several years previously, obtained positive agglutination in a dilution of 1:640. With the possibility of Malta fever thus brought to mind, serums from several other patients with similar symptoms were tested, but the agglutinations were negative, and the local and state health authorities did not feel justified in condemning the goat's milk without more positive laboratory proof. New cultures of *Brucella melitensis* were obtained from the Hygienic Laboratory the latter part of July, and on August 4, all patients then under suspicion were retested and nine of them were found to give positive reactions, these results being confirmed by the Hygienic Laboratory. The sale of goat's milk was stopped, August 5. During August, eleven additional positive cases were found, making a total of twenty.

In the latter part of August, the Public Health Service was requested by the superintendent of Public Health of Arizona to send an epidemiologist to investigate the situation. As a result, one of us (G. C. L.) was detailed, and during September succeeded in discovering fifteen additional cases, mostly of the ambulant type. Two other cases were added during October, bringing the total number to thirty-seven.

The sale of raw goat's milk was begun, April 7. The total amount distributed in April was 707 quarts; in May, 1,307 quarts; in June, 830 quarts, and in July, 426 quarts. The peak of distribution was from May 8 to May 20. It was impossible to check up from the dairy records all the persons to whom this milk had been distributed, as it was sold partly on a cash basis, and also by several of the soda fountains. It is estimated that 400 or 500 people had taken the milk one or more times. The method of investigation, therefore, was to secure the cooperation of the physicians of the city and investigate, personally, every suspicious case, as well as to test every available serum for agglutination.

During the months of August, September and October 562 serums were tested in the Pathological Laboratory (table 1). Of these, 480 were sent in for routine Wassermann tests or other serologic work. Two of these gave positive reactions for Malta fever (cases 32 and 33 in table 2). Twenty-one serums from febrile cases in which the test for Malta fever was not specifically requested showed five positive reactions (cases 6, 7, 11, 15 and 19, table 2). In the remaining sixty-one serums, the test for Malta fever was requested by the physicians in charge, or was done on our own initiative; thirty of these gave positive reactions for Malta fever (tables 2 and 3). One patient (case 1), with clinical evidence of Malta fever, refused to have a blood test.

A more detailed summary of the laboratory reactions in the eighty-three patients with Malta fever and in the other febrile patients is presented in table 2. It is probable that some of the patients with negative reactions, especially those in whom only one test was made, really had the disease, as it was found in several instances that patients giving negative reactions at first gave positive reactions later. However, no patient is reported here as having had Malta fever unless there was positive agglutination in a dilution of 1:100 or higher. This probably ruled out some cases, since it was found that normal serums did not give agglutination in a dilution of 1:10.

The antigen was prepared from forty-eight hour growths of strains of *Brucella melitensis* supplied by the Hygienic Laboratory, washed off with 0.5 per cent phenol (carbolic acid) in physiologic sodium chloride solution, no heat being used. Dilutions of serum ranging from 1:50 to 1:400 were usually set up, though in some instances higher or lower dilutions were used. Tubes were incubated at 37 C. and then placed in the icebox, final readings being made at the end of twenty-four hours.

It should be stated here that while the simple agglutination of *Brucella melitensis* antigen by the patient's serum is almost specific evidence of Malta fever, it does not give any indication as to whether the infecting agent is the true *Brucella melitensis* or the variety *abortus*, and it does not entirely eliminate tularemia. Francis and Evans,[4] in a recent publication, conclude as follows:

1. On account of the frequent cross agglutination between *tularense*, on the one hand, and *abortus* and *melitensis*, on the other, serums from suspected cases of tularemia and undulant fever should be tested for agglutination of *tularense* and either *abortus* or *melitensis*, unless the clinical history points definitely to a recognized source of infection for tularemia or undulant fever.

2. That a serum which shows a marked difference in titer for *tularense*, on the one hand, and for *abortus* or *melitensis*, on the other, can usually be classed by the higher titer as due either to tularemia or to one of the varieties of *Brucella melitensis*.

3. That a serum which agglutinates all three organisms to the same or nearly the same titer should be subjected to agglutinin absorption tests.

A clinical summary of the thirty-seven patients giving positive evidence of Malta fever is presented in table 3. In addition to the laboratory observations and the report of the attending physician, each of these patients was personally investigated by us. It is impossible to give in this paper detailed clinical reports of these patients. It will be noted that all of the patients, except five, had drunk goat's milk during April or May; three of the latter drank milk at soda fountains; a fourth secured cow's milk from the dairy handling the goat's milk, and the fifth gave an entirely negative history concerning goat's milk. The agglutination titers and blood counts of these patients will be found in table 2.

The goats supplying the milk from April 7 to about June 1 were Angoras, some of them probably raised in other states. Later, milk from a number of Toggenburg goats raised in Arizona was added. When the sale of milk was stopped on August 5, the Angoras were moved away from Phoenix, but with the help of Dr. M. Shipley of the Bureau of Animal Industry,

4. Francis, Edward; and Evans, Alice C.: Agglutination, Cross-Agglutination and Agglutinin Absorption in Tularemia, Pub. Health Rep. 41: 1273-1295 (June 25) 1926.

blood specimens were obtained from 115 of these goats and the serums forwarded to the Hygienic Laboratory. Twenty-one of these, or 18.3 per cent, were found positive by the agglutination test; this corresponds closely to the figures of Gentry and Ferenbaugh in their Texas investigation of 1911, when 19.4 per cent of 129 goats were found positive. The Toggenburg goats were also investigated, 143 serums being obtained and tested, but only two were positive and these only in low dilution. It appears, therefore, that the Angora goats were probably the source of the epidemic.

REPORT OF CASES

The following condensed summaries of clinical records are given as illustrative of different types of the disease.

CASE 8.—O. S., a youth, aged 19, a soda fountain clerk, who had drunk goat's milk from May 8 to 18, 1922, called a physician, May 18, because of headache, pain in the back (so severe that smallpox was suspected), and high fever. He was in bed from May 21 to August 28, during which time he had a typical undulant fever. He became very emaciated, with pains in the joints and muscles and splenic enlargement. The laboratory observations are shown in table 2. He was in good health in April, 1925.

CASE 12.—McE., a man, aged 40, a clerk, admitted to the hospital, June 1, 1922, with a provisional diagnosis of typhoid, had not been well for ten days. On admission, the temperature was 103.4 F.; there was headache, general malaise, slightly tender abdomen and enlarged spleen. The Widal reaction was twice negative. He was in the hospital until September 7. There was no record of his having drunk goat's milk, though he took milk drinks from the soda fountains. The blood serum was twice positive for Malta fever (case 12, table 2). He is in fair health at the present time (1925), though he occasionally has mild febrile attacks without apparent reason.

CASE 33.—P. C., a man, aged 37, a restaurant proprietor, was typical of the several ambulant patients. He drank goat's milk all the time it was on the market. When seen in connection with a visit to his brother (patient 13, table 2), he said that he had not felt well all summer. He refused to have a blood specimen taken, but this was later sent in by his physician for the Wassermann reaction. Agglutination was positive for Malta fever in 1:400 dilution.

CASE 2.—C. W. R., a woman, aged 38, a housewife, apparently with arrested tuberculosis, drank goat's milk daily from April to the middle of June. About June 10, a fever developed which gradually became more severe and by July 1 had reached 104 F., accompanied by drenching sweats. The temperature remained high for two weeks; then came a remission of a few days, followed by another rise until August 20, with another remission until September 10, when another exacerbation occurred. On the 19th, during the height of this fever, her physician (Dr. S. D. Whiting) secured the blood specimen from which *Brucella melitensis* was isolated in pure culture.

A culture from case 2 was subsequently used in experimental work at the Hygienic Laboratory (H. L. 451), and has apparently been responsible for three laboratory cases of Malta fever. Although a number of strains of *Brucella melitensis* had been carried at the laboratory for years, no case of laboratory infection of Malta fever had occurred prior to the time H. L. 451 was introduced. A brief summary of these three cases is given below, to emphasize the frequency of laboratory infections, and to show their similarity to cases acquired in the usual manner. In each of these cases *Brucella melitensis* was isolated from the blood and shown by agglutination absorption tests to belong to the same group as H. L. 451.

CASE 38.—B. T. S., a man, aged 32, a bacteriologist, was probably infected by handling inoculated rabbits. The onset, June 6, 1923, was sudden, with headache, high fever and chills. Pain and soreness of all the joints developed, with nausea and malaise. Agglutination, June 14, was positive in 1:1,280 dilution, and on June 23 was positive in a dilution of 1:5,200. During this time the serum was also positive in low dilutions for tularemia. A culture taken on the latter date was positive for *Brucella melitensis*. Fever was distinctly undulant, with chills, drenching sweats, pain in the back and obstinate constipation. He had apparently fully recovered within a year, except for chronic lumbago.

CASE 39.—E. A. C., a woman, a bacteriologist, was probably infected in October, 1922, shortly after beginning work on animals with H. L. 451. The patient was indisposed for several months, and was confined to the house and bed most of the summer of 1923. Repeated agglutination tests were made but were never positive in more than very low dilution. Attempts to isolate the organism from the blood and urine were negative until Sept. 25, 1923, when a blood culture yielded *Brucella melitensis* in pure culture. The symptoms were principally malaise, fever, severe joint pains and constipation. By Jan. 1, 1924, she had apparently recovered only to have another relapse of six months' duration, beginning in June. She has worked steadily from January, 1925, until May 1, 1927, and is now in the hospital with what appears to be another relapse or new attack. Practically all the work with *Brucella melitensis* cultures at the Hygienic Laboratory was done by this patient.

CASE 40.—In G. C. L., a man, aged 40, a physician, the time and manner of infection were not definite, but he had been in contact with patients and with laboratory cultures. He first noticed headache in January, 1924, and fever, February 5. Malta fever was not suspected until February 25, when an agglutination test was positive. A blood culture was positive, April 1. The course of the disease has been chronic, with several relapses. The fever was not typically undulant.

This patient was also infected with tularemia in 1921, which may at times be chronic, and which probably influenced the course of the illness. He has not yet entirely recovered.

As the tables and records of cases indicate, almost every variety of case, from ambulant to fatal, was encountered in this epidemic. In the two fatal cases, Malta fever was a complicating factor of other chronic conditions. The period of total or partial incapacity in practically all the bedfast cases was from six months to a year, while some of the chronic cases still show symptoms after several years.

During the past five years, the most important work done in connection with Malta fever has been the investigation on the relationship between *Brucella melitensis* and *Brucella abortus* by Miss Evans,[5] which is given in full in a recent report. In brief, this has resulted in establishing the very close biologic kinship between these organisms. Culturally, they cannot be distinguished, and the serums of Malta fever patients will agglutinate either organism. Finally, the relation of *Brucella melitensis-abortus* of cattle and hogs as sources of human infection appears definitely established.

The abortus type of infection produces a disease clinically undistinguishable from Malta fever due to true *Brucella melitensis*, although it seems, as a rule, to be less severe. Keefer, in 1924,[6] reported the first case of this type in the United States. Since that time several other cases have been added, and recently Miss Evans[7] has collected and summarized reports of twenty cases in which she has determined the type of infecting organism to be *Brucella melitensis*, variety *abortus*, of cattle or hogs.

5. Evans, Alice C.: Studies on Brucella Melitensis, Bull. 143, Hyg. Lab., U. S. P. H. S., 1925.
6. Keefer, C. F.: Report of a Case of Malta Fever Originating in Baltimore, Bull. Johns Hopkins Hosp. **6**: 14 (Jan.) 1924.
7. Evans, Alice C.: Human Infections with Organism of Contagious Abortion of Cattle and Hogs, J. A. M. A. **88**: 630 (Feb. 26) 1927.

The demonstration of the close biologic relationship between these organisms opens a wide field for study and clinical observation.

SUMMARY

1. The one instance of an epidemic of Malta fever in the United States was proved to be due to raw goat's milk.

2. Malta fever is endemic in the goat raising district of the Southwest and should be constantly guarded against.

3. A tabulation of forty cases of Malta fever shows the high specificity of the agglutination reaction and the constant leukopenia with mononucleosis.

4. Malta fever may occur in every degree, from a mild ambulant type which may easily escape detection to very acute cases with abrupt onset, and it may persist in chronic form for from many months to several years.

5. Only by bearing in mind the possibility of Malta fever and examining as a matter of routine the blood serums of all febrile patients can the presence of this disease be detected in a community.

6. The sale of raw goat's milk should be prohibited.

7. The demonstrated biologic relationship between the organisms of contagious abortion of cattle and hogs and the Malta fever in goats opens up important fields for epidemiologic and clinical observation.

ABSTRACT OF DISCUSSION

DR. ALLAN C. EUSTIS, New Orleans: A case of malta fever was observed by me in Louisiana in 1913, and that is the only case I have seen. This case was studied rather carefully. It differed in its manifestations from the cases reported by Watson and Lake. In their cases yielding a positive culture of the melitensis organism, a leukopenia did not occur; but there was a slight leukocytosis, 14,000 in one case and 17,000 in another. In my case there was a constant leukocytosis. We obtained a positive culture of the organism after first obtaining an agglutination reaction which was made with the help of Dr. Wellman and Dr. Schochert. The case resembled typhoid, and was so treated for a month until I realized that typhoid could not continue as long as this case had. The fever continued from March until June; I treated the patient from June until July, until Dr. Wellman came to my rescue. The spleen was enlarged, but subjective symptoms of typhoid were absent. One symptom was a high elevation of temperature with practically no subjective symptoms. On three or four occasions the temperature rose to 107 F. without any mental aberration whatever, or other symptoms usually associated with toxemia and high temperature. The patient died from bronchopneumonia. A partial autopsy was made. The spleen was considerably enlarged and fibrous but the spleen pulp was not increased.

DR. F. C. E. MATTISON, Pasadena, Calif.: As chairman of the Los Angeles Medical Milk Commission, my attention was called recently to four cases in the southern part of the state. We consulted with Dr. Karl Meyer of the George Hooper Foundation, and he stated that there was nothing on record that would show that this was true malta fever. None of these patients gave a history of having used certified milk. Dr. Theobald Smith of the Rockefeller Foundation says that they have no assurance this is a milk-borne disease.

DR. H. C. GORDINIER, Troy, N. Y.: I have had the opportunity of proving by culture that an infection was undulant fever due to *Bacillus abortus*. A man, aged 50, obtained his milk from a Guernsey cow. The blood serum of the cow and the milk were agglutinated by *Bacillus abortus*. This patient had a continuous fever with marked undulations for eight or ten weeks. He has been free from fever for three weeks. Blood counts were made almost daily, and there was always a leukopenia. Another interesting point was the absence of a urinary diazo reaction during the entire course of the disease. I was interested in the study of the reflexes in this case, as the umbilical reflexes are practically always absent in typhoid. In about 100 cases of typhoid in which I have observed the reflexes, I found that at the end of the first week the infra-umbilical reflex is absent at first on the right side and then on the left, and these reflexes continued to be absent until the patient became free from fever and was convalescing. I should like to ask Dr. Lake whether these reflexes were present or absent in his cases.

DR. G. C. LAKE, Washington, D. C.: The symptoms vary greatly in different cases, and involvement of the central nervous system is common, so that one might encounter almost any kind of nervous phenomena. High temperature, with comparatively few subjective phenomena, is rather marked in many cases but this apparent mildness should not mislead one into making a favorable prognosis as to the duration of the illness. Spleen puncture, which used to be the method of obtaining the organism, should no longer be used, as with proper technic cultures can usually be obtained from the blood, with no danger to the patient. The Los Angeles cases are interesting. Raw cow's milk is probably responsible for a number of such cases of obscure origin. That is one of the important points on which we should try to get further information, and proof. As regards agglutination, the degree necessary to make a diagnosis depends on the history of the case. In an epidemic in which many cases are present, a moderate degree of agglutination would be regarded as satisfactory. When we are trying to pin the cause down to raw cow's milk or an unusual source of infection, we are not satisfied with the agglutination test alone, even when positive in fairly high titer. We should get cultures from both the cow or other source and the patient if possible, and type them by means of the agglutinations-absorption method.

AN OUTBREAK OF GASTRO-ENTERITIS

MILK-BORNE EPIDEMIC AT DYERSBURG, TENN., CAUSED BY SALMONELLA SUIPESTIFER *

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Medical literature of recent years has contained an increasing number of articles dealing with outbreaks of gastro-enteritis. The articles deal with the etiologic agents, the symptomatology, the epidemiology, and the conveyers of the infectious agent. A variety of names have been given these outbreaks, and many organisms have been accused of being the cause of these conditions. This epidemic is described as an example of an outbreak of this kind, the vehicle being raw milk. Most of the outbreaks reported have shown the causative agent to be carried in some meat food. Nearly all epidemics which involve a large number of people show that milk has been the vector of the infectious agent.

SANITARY CONDITIONS IN DYERSBURG

Dyersburg is the county seat town of Dyer County. The Mississippi River borders the county on the west. Dyersburg is 75 miles northeast of Memphis. The census of 1920 gave the city a population of 6,444, and local estimates made at the time of the investigation gave a population of about 9,000 persons, with 6,000 of these white and 3,000 colored.

The water supply is owned by the municipality and comes from wells from 600 to 800 feet deep; the water

* From the Tennessee State Department of Public Health.
* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Eighth Annual Session of the American Medical Association, May 19, 1927.

is settled, and rapid sand filtration is employed. The water is not chlorinated. The analyses of the previous six months had shown a water of good sanitary quality.

There is a fairly complete system of sewerage, but there is an estimated number of between 500 and 600 privies in the city which have tubs or cans, with scavenger service. This service is not maintained with any great degree of completeness.

Six dairies supply the bulk of the trade of the city. There are a number of small producers, owners of two or three cows, who supply from 25 to 35 gallons of milk daily. All milk used in Dyersburg is raw milk.

Some of the ice cream used is made locally, and a good deal is shipped in from Memphis.

Ice is manufactured and distributed by two local companies.

Raw fruits and vegetables are secured from a variety of sources, and distributed through markets and pedlers.

Dyer County has a full-time county health department, and this service is cooperated in by the city of Dyersburg. The county health officer also serves as city health officer, and the sanitary inspector serves both county and city. A public health nurse and an office clerk complete the personnel of the health department. The work of the department has been well planned and well supervised. The need of some sort of milk control had previously been brought to the attention of the city officials. A privy ordinance was in the process of passage at the time of this outbreak, and has since been adopted.

CLINICAL SYMPTOMS

After a short incubation period, ranging from eight to thirty-six hours after the entrance into the body of the causative agent, symptoms came on rather suddenly. Headache, followed by severe backache, nausea and vomiting, abdominal pains and diarrhea were almost constant symptoms. More than half the patients gave a history of one or more severe chills followed by a rapid rise in temperature to a height of 104 or 105 F., in some cases. A convulsion was the initial symptom in some of the young children affected. A few patients suffered a very marked collapse, with small pulse and cold, wet skin. Coma or slight delirium was noted in a few cases. As a rule, the acute symptoms subsided within two or three days, nearly all persons affected being up and around within a week after the onset of symptoms. A remarkable degree of muscular weakness was shown after the patient had passed through the acute stage of the sickness. No deaths occurred.

EPIDEMIOLOGIC OBSERVATIONS

From Saturday night, September 4, until Monday night, September 6, fully 98 per cent of the cases had their onset. Prior to Saturday there had been no cases of this kind so far as the health department could ascertain. One hundred and fifty persons with this trouble were seen by physicians during the outbreak, and there were in all likelihood others with symptoms not severe enough to warrant the calling in of a medical attendant. The presence of this number of persons with practically identical symptoms, in such a short period of time, established the presence of an epidemic of a very explosive type, and gave rise to the natural assumption of a common vehicle of infection.

Of the seventy-six patients studied, four had the onset of the disorder on Saturday, fifty-three on Sunday, eighteen on Monday, and one on Tuesday. Seventy-one of these were white and five colored, four of the colored patients being cooks in white households, and the other a boy working about the yard of a white family and taking his meals in the kitchen of that family. Thirty per cent of the cases occurred in children under 10 years of age, this being nearly twice the estimated population percentage of that age. The cases occurred in the well-to-do section of the city.

Eighty-six per cent of the persons affected used milk as a beverage. An additional 11 per cent used milk in some other way. Eighty-four per cent of those affected used milk from dairy 1, which was the second largest distributor.

No connection could be established between the occurrence of the disease and the use of any ice, ice cream, raw fruit or vegetable supply, nor could the sanitary conditions of the premises be shown to be involved.

The city water supply was used in all cases investigated, either exclusively or nearly so. It is very difficult to conceive of a water-borne infection causing such severe symptoms in such a short period of time. Should it be possible for such a contamination to occur, it is quite beyond the possibility of chance for so many cases of the disease to have developed in one group of persons.

It would have been impossible for a contact infection to develop so explosively.

Thus the milk supply remained as the remaining vehicle of infection. Sixty-four, or 84 per cent, of the patients investigated obtained milk either wholly or partly from dairy 1. Three of the patients supplied with milk from dairy 2 partook of home-made ice cream in which milk and cream from dairy 1 had been used. The two other patients supplied by dairy 2 had milk drinks Saturday evening at the one drug store which was supplied with milk from dairy 1. The two users of milk from dairy 3 had been on a pleasure trip on Sunday and had eaten beef sandwiches at a roadside camp. They attributed their illness to these sandwiches, as they said "they did not taste right" when they ate them. Two other members of this family used no milk at all and yet suffered violently. The two users of milk from dairy 4 also had had milk drinks at the drug store mentioned Saturday night. One boy using milk from the family cow had worked in the drug store Sunday as extra help, and had eaten whipped cream from the supply of cream from dairy 1. It can be seen, then, that, with the exception of the cases in the family previously mentioned, all cases investigated can be either directly or indirectly traced to the milk supply of dairy 1. Sixty of the patients were exposed to milk from the morning's delivery only. Six were exposed to both morning and evening deliveries, and in six cases the time of delivery was not noted. It is reasonable, then, to assume that the causative agent was present in only one delivery, that of Saturday morning, September 4.

Dairy 1 was visited and found to be quite well equipped for a dairy of such size, but not with all the equipment necessary for the production of clean, safe milk. The pasture used by the dairy had at one end a ditch, which was, at the time of the investigation, nearly dry. There had been no rains since August 21, but before that there had been rains every day since August 1. About 200 yards above the pasture the effluent from a large septic tank emptied into a small stream. At no time had the pasture been overflowed by water from this stream, but it was possible and

entirely probable that some of the effluent from this tank flowed with the stream into this ditch, which under usual conditions was dry. No history of previous cases of a similar disease or of possible carriers was reported from the homes contributing sewage to this tank.

The dairy owner had been away on a trip for three days, arriving home Saturday noon, September 4. He was not in a position to say definitely that all his usual requirements as to the handling of milk had been complied with during his absence. Saturday evening, he noticed that three of his cows came to the barn with flanks and udders considerably soiled with mud from the ditch in question.

The possibility of human carriers was considered. All stool specimens from workers of the dairy were negative.

ISOLATION OF ORGANISM

Bacteriologic and Serologic Studies.—Dr. R. L. Motley, pathologist to the Baird-Brewer Hospital of Dyersburg, Tenn., selected two cases for study as being representative of the entire group of patients with the disease. Within twelve hours of the onset of the symptoms, cultures had been made on endo-agar plates of the feces of the two patients. Several plates from each specimen of feces were made. On every plate from the two samples there appeared quite a number of colorless typhoid-like colonies of a gram-negative motile bacillus that conformed culturally to the bacillus paratyphoid B organism. Several of these micro-organisms were studied from each plate and all presented the following characteristics: On agar plates they showed a uniform grayish translucent growth of a fairly motile gram-negative bacillus. They fermented dextrose, mannite, maltose and Russell's double sugar (alkaline slant), but did not react to lactose or saccharose. There was no liquefaction of gelatin.

Agglutinative Tests: The organisms were strongly agglutinated by the serums of five patients who had had the disease under study, none of whom gave any history of any typhoid-like disease at any time. One of them had been inoculated with triple typhoid vaccine in 1918, but none of the others had ever had vaccine. All but one of the patients had recovered from their illness when the tests were made, and this patient had a continuous fever for three weeks. The serums of these patients also agglutinated strongly stock paratyphoid B bacilli, but did not agglutinate stock typhoid or paratyphoid A. The organisms under study were not agglutinated by normal control serums. These results were also confirmed by Dr. William Krauss of Memphis, director of the West Tennessee Branch Laboratory of the State Department of Public Health.

Their conclusions were that the micro-organism under investigation belonged to the bacillus paratyphoid B group or *Salmonella paratyphi* B group.

Further Investigations.—A culture was sent to one of us (W. L.) to carry on a detailed study of the micro-organism.

Fermentative Reactions: The micro-organism fermented, in addition, the following sugars: rhamnose, sorbite, galactose, xylose and dulcite (eight days). No fermentation was recorded on arabinose, trehalose and inosite. In testing inosite, Jordan's method in determining the p_H values of the mediums at stated intervals was performed; it was very satisfactory with the control organisms used, as well as with the one under discussion. Indole was not found, and there was no Voges-Proskauer reaction.

Agglutinin and Absorption Tests: Rabbits were immunized with two strains of *Salmonella enteritidis* (Gärtner); two strains of *Salmonella paratyphi* B (Schottmüller); two strains of *Salmonella aertrycke* (Mutton-Newport), and two strains of *Salmonella suipestifer*. Also rabbits were immunized with the micro-organism under investigation. Very satisfactory titer was obtained from these tests, ranging from 1:3,000 to 1:10,000. Without going into the details of the well known absorption method, suffice it to say that the two stock strains of *Salmonella suipestifer* completely absorbed the serum of the micro-organism under investigation, and likewise that the latter micro-organism completely absorbed the serums of the two stock strains of *Salmonella suipestifer*.

The serum of the organism under investigation and the two serums from stock strains of *Salmonella suipestifer* showed only partial absorptive powers to all of the other serums mentioned, and vice versa.

A study of all the immune serums made it quite evident that the agglutinative tests alone could not be wholly relied on. Group agglutination with unabsorbed serum is often so pronounced as to give little definite information unless additional tests are made with properly absorbed serum.

Agglutination Tests on Patients' Serums: The serums from three patients were obtained about two months after convalescence. The accompanying table shows their agglutinative powers.

Agglutination Tests on Patients' Serums

Patient	Isolated Organism	S. Suipestifer	S. Aertrycke	S. Paratyphi B.	S. Enteritidis
1	1:640	1:640	1:80	1:80	1:10
2	1:320	1:320	1:60	1:60	1:10
3	1:160	1:160	1:40	1:40	1:10

Application of the absorption tests with these serums shows that the isolated organism and *Salmonella suipestifer* are identical. The agglutinins of the other micro-organisms are practically absorbed by *Salmonella suipestifer* and by the strain under investigation. The other micro-organisms do not materially affect the agglutinative power of the serums to *Salmonella suipestifer* or to the isolated micro-organism under investigation.

Study of the Feces After Convalescence: About one month after convalescence an attempt was made to recover the micro-organism. Five patients were selected and their stools examined every day for three days with negative results.

Animal Experiments: The micro-organism under investigation was not markedly virulent or toxic for guinea-pigs or mice. Four rabbits were also inoculated with 0.01 cc. of an eighteen hour broth culture. These rabbits died in from five to seven days. The strain therefore has a virulence for rabbits which has been noted by Theobald Smith in his work with *Bacillus cholerae-suis* or *Salmonella suipestifer*.

Autopsy showed pale spots on the spleen; a mottled liver; small hemorrhages in the lungs; congestion of the vessels in the small intestine, and hemorrhagic areas in the peritoneum. The micro-organisms were recovered from the heart's blood, liver and spleen.

SUMMARY AND CONCLUSIONS

1. The outbreak of gastro-enteritis here described involved more than 150 people.

2. Symptoms of a toxic nature were noted, such as severe headache, nausea and vomiting, diarrhea and

profound muscular weakness. A few cases showed delirium. The incubation period ranged from eight to thirty-six hours. Recovery was practically complete within one week.

3. The vehicle of infection was a raw milk supply.

4. It seems probable that the infection gained entrance to the milk through lax measures in cleansing the udders and flanks of the cows.

5. The organism isolated conforms in its morphology, tinctorial and serologic reactions, and virulence to rabbits to *Salmonella suipestifer* (*Bacillus cholerae-suis*).

6. In a review of the literature we do not find any report of an outbreak caused by milk contamination with *Salmonella suipestifer*.

ABSTRACT OF DISCUSSION

DR. KENNETH F. MAXCY, Washington, D. C.: This is a striking instance of an explosive outbreak of an infection of the paratyphoid group confined almost exclusively to the patrons of a single dairy. The evidence that the vehicle of infection was milk is quite convincing, and yet very few outbreaks of this type have been reported in the literature of milk-borne epidemics. Concerning the original source of the infection, one can only speculate. While in the case of *B. typhosus* and *B. paratyphosus* A one can reasonably assume that the organism was ultimately derived from human sources, the paratyphosus B group is so widely distributed in nature that an animal origin may commonly be assumed, whether it be cattle, swine or rodents. The bacteriologic classification of this group of organisms is very difficult. There appear to be innumerable strains, distinguishable one from the other only by careful serologic analysis.

DR. LLOYD ARNOLD, Chicago: Three things brought out in this paper I thought were very interesting. One was the time of the year of the epidemic; another was the vehicle, milk, and the third was the great susceptibility in patients under 10 years of age. One can readily realize that milk, which has a high alkaline content and requires a considerable amount of acid before it is properly acidified, when kept in an environment of relatively high temperature is an efficient vehicle for conveying gastro-intestinel bacteria. The susceptibility of children under 10 is in keeping with our knowledge of the great instability of their gastric mechanism. The fact that half of the cases showed chills certainly almost excludes the fact that the condition was an intoxication. The reaction was too severe for just a gastro-intestinal irritation. The workers are to be complimented particularly on the bacteriologic phase of the whole paratyphosus B group. Other than *B. paratyphosus* B itself, these bacteria seemed to be a group that shifted from one domestic animal to another. They are in fact undifferentiated so far as their habitat is councerned. They are the vagabonds of the bacterial world that sometimes attack man and at times are very virulent.

AUBREY H. STRAUS, Richmond, Va.: It was not clear to me how the incubation period was determined. I could not determine how the date of infection was established. I should also like to ask whether blood cultures were taken in any of the cases.

DR. H. C. STEWART, Nashville, Tenn.: We were unfortunate in not being able to get blood cultures at the time of the epidemic. We could not absolutely exclude the possibility of the bacteria being in the blood, although it seemed rather unlikely in the face of the symptoms we did see and which were described. We did not believe that the condition could have been a bacteremia, for in that case it would have been more likely that symptoms would have continued over a much longer period of time. The incubation period was determined largely in the reverse manner from which we usually determine that period. We were able to establish almost immediately that this one milk supply was the source of infection, and all we had to do was to trace back to the time these patients were exposed to the milk supply. There was the one drug store that obtained milk from the dairy implicated, and the only drug store supplied by the dairy which obtained milk only in the morning delivery. Certain persons living in the country come to town only on Saturday evening. They go to the drug store and get their milk drinks then. There were a number of persons scattered in the surrounding country who had been exposed to the milk Saturday evening, that is from the Saturday morning's delivery. However, we did not have a full investigation of those. Also some persons were affected by the whipped cream and became sick twenty-four hours later than the ones exposed to milk. The cream is allowed to ripen a little in order to be in better shape for whipping. That is the way we determined that the time of incubation was from eight to thirty-six hours: really by reverse methods. Dr. Chesley called attention to the fact that this epidemic brought about the installation of the standard milk ordinance in the city.

DR. WILLIAM LITTERER, Nashville, Tenn.: Dr. Stewart answered the questions concerning blood cultures. It was really unfortunate we did not get blood cultures, as that would certainly have eliminated doubt, and blood cultures would have been easier to work with than the stools. Since that was not done, the next procedure was to find the number of micro-organisms in all the cases examined, and then to watch for the disappearance of the micro-organism after convalescence. Then, after convalescence, the definite agglutination obtainable makes practically certain the identification of the micro-organism. I should like to have had several cultures isolated from the blood. I am inclined to believe they would have demonstrated bacteremia. In three patients, the illness persisted, with chills and fevers.

VITAMIN E

II. THE DESTRUCTIVE EFFECT OF CERTAIN FATS AND FRACTIONS THEREOF ON THE ANTISTERILITY VITAMIN IN WHEAT GERM AND IN WHEAT GERM OIL *

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The acceptance of very clear evidence for the existence of the antisterility vitamin E has undoubtedly been delayed by certain discrepancies in dietary experiments. Different simplified and supposedly E free diets have yielded differing results as concerns their power to result in early and complete sterility in animals. We feel that we possess an adequate explanation of these discrepancies. Some investigators have reported widespread initial fertility with simplified diets, but their diets have frequently erred grossly by including fats now known to contain E—e. g., butter and Crisco. Some of them, however, contained no appreciable fat and yet fertility—at least initial fertility—resulted. We refer to the use of diets like our diet 223 (casein, 23; cornstarch, 73; salts, 4—daily separately 0.6 Gm. of yeast and 3 drops of cod liver oil) in which more than half of a group of animals are enabled to give birth to litters of living young. We know that during its intra-uterine life every fetus obtains from the mother very considerable amounts of vitamin E and stores them in its tissues. Evidently, then, young animals by adding a very slight dietary source of E to their own body stores have enough of the vitamin for initial fertility. *If the dietary source*

* From the University of California Medical School.
* Aided by grants from the Committee for Research on Problem of Sex of the National Research Council and from the Bureau of Dairy Industry of the United States Department of Agriculture. These funds have been generously augmented by the Board of Research and by the College of Agriculture of this institution.

is actually nil they are sterile, for we have never worked with a rigorously extracted and hence actually E free diet and encountered fertility. We refer, for instance, to our "pure" diet 519 (casein purified, 25; sucrose recrystallized, 75; salts, 4). Now other studies have shown that sterility with simplified diets is more regularly produced when high amounts of lard are employed. We are able to show that raising the lard quota from 8 to 22 per cent—the other constituents being casein and corn-starch—greatly increased the sterility of first breedings in an extensive series of experiments. More striking, perhaps, was the similar effect of adding 10 per cent of lard to a diet possessing 5 per cent of butter—a well known source of E—and in watching the change from high initial fertility (83 per cent) with the butter alone to high sterility (92 per cent) when the butter remained but lard was added. One of the explanations of this sterility-producing effect of the lard addition was that the total fat (15 per cent) was now too high; but this is untenable, for E-containing fats like butter can easily constitute one fourth by weight of a ration and sterility never results. Evidently, then, lard has peculiar effects and even exhibits active opposition to a known source of E like butter. This led us to mix lard with another known and very high source of E—wheat germ—and to devise what we consider an ideally controlled experiment to demonstrate this antagonism. We selected only animals known to be sterile from lack of E and attempted to see whether contact with lard would clearly destroy the curative action of a well standardized minimal effective dose of wheat germ. We have recently published evidence that this is always the case.[1] The present communication aims to inquire further into the nature of this destructive action shown by certain fats.

TABLE 1.—*Ingredients of Diets 228, 232 and 316*

Ingredients	Diet 228	Diet 232	Diet 316
Casein (commercial)	27.0	32.0	24.0
Corn-starch (cooked)	59.3	40.0	72.0
Lard	7.7	22.0	....
Salts (salt mixture 185)	4.0	4.0	3.6
Cod liver oil (Patch)	2.0	2.0	...

EXPERIMENTAL

The methods used in the preceding work were continued. Female rats were put on the sterility-producing diet 232 (table 1) on the twenty-first day of life and were bred at the sixtieth or ninetieth day of life. Those which had a typical resorption due to the lack of vitamin E were designated as "cures" and were used at once for this work. When wheat germ was used as the standard vitamin E dose and a fat was being tested for its antivitamin effect, the following procedure was adopted: The fixed dose of wheat germ known to be curative of sterility under ordinary conditions was mixed with the melted fat (warm but not hot), left for a few minutes to be well soaked, and then cod liver oil, casein, corn-starch and salts were added to make up 1,000 Gm. of the diet. As the amount of fat in the diet was increased, the dose of wheat germ was correspondingly increased so that 1 Gm. of germ was consumed with every 200 calories of diet. The 1,000 Gm. of diet was always completely consumed by four animals before the twentieth day of gestation, and after its consumption diet 232 was again placed in the food cups.

LARD

The results of feeding various levels of lard mixed with wheat germ are summarized in table 2. It is seen that when each sterile female consumes a total of 6.5 Gm. of fresh wheat germ during gestation, 8.4 Gm. of lard per gram of germ is required to prevent almost completely the birth of litters. It has been shown[1] that stearic acid had little or no effect on the curative value of wheat germ but that oleic acid (technical and U. S. P.) was even more destructive to vitamin E than was lard. Further work has shown a rather definite level at which the oleic acid must be fed in order to render ineffective the standard dose of fresh wheat germ. The results in table 3 show that it is only when the dose of germ is 11 Gm. per animal and the oleic

TABLE 2.—*Amount of Market Lard Required to Render Ineffective a Given Amount of Wheat Germ*

Test No.	Diet Used	Grams of Lard per Gram of Germ	Grams of Germ Consumed by Each Rat	Number of Cure Animals Used	Number of Litters Born	Number of Young Born	Number of Resorptions
1035 A	20 Gm. of germ without lard was mixed with the other ingredients necessary to make diet 31, and 2% cod liver oil added	0	5.0	4	4	26	0
1035-D	20 Gm. of germ + 5 Gm. of lard mixed with yeast and fed in place of ordinary yeast; basal diet 232	0.25	5.0	4	3	23	1
1035-C + 1049-D	22 Gm. of germ + 77 Gm. of lard were mixed with the other ingredients necessary to make diet 228	3.5	5.5	8	7	33	1
1039-B + 1039-D	52 Gm. of germ + 220 Gm. of lard were mixed with the other ingredients necessary to make diet 232	4.2	13.0	9	8	58	1
1035-B + 1049-C	26 Gm. of germ + 220 Gm. of lard were mixed with the other ingredients necessary to make diet 232	8.4	6.5	8	1	2	7

TABLE 3.—*Amount of Oleic Acid (U. S. P. and Technical) Required to Render Ineffective a Given Amount of Wheat Germ*

Test No.	Diet Used	Grams of Oleic Acid per Gram of Germ	Grams of Germ Consumed by Each Rat	Number of Cure Animals Used	Number of Litters Born	Number of Young Born	Number of Resorptions
1043-C	44 Gm. of germ + 77 Gm. of oleic acid (U. S. P.) were mixed with the other ingredients necessary to make diet 228	1.75	11.0	4	3	18	1
1043-B + 1049-A	22 Gm. of germ + 77 Gm. of oleic acid (U. S. P.) were mixed with other ingredients necessary to make diet 228	3.5	5.5	8	0	0	8
1041-B	22 Gm. of germ + 77 Gm. of oleic acid (technical) were mixed with other ingredients necessary to make diet 228	3.5	5.5	4	0	0	4
1037-B	26 Gm. of germ + 220 Gm. of oleic acid (technical) were mixed with other ingredients necessary to make diet 232	8.4	6.5	4	0	0	4

1. Evans, H. M., and Burr, G. O.: Vitamin E: The Ineffectiveness of Curative Dosage When Mixed with Diets Containing High Proportions of Certain Fats, J. A. M. A. **88**: 1462 (May 7) 1927.

acid has been reduced to 1.75 Gm. per gram of germ that enough active vitamin E remains to allow the birth of litters.

The oleic acids used had a very strong odor and flavor of rancidity and it seemed possible that the marked E-opposing effects could be traced to the presence of the rancid substances. It did not seem at all probable that pure oleic acid could be responsible for such effects. The chemistry of rancidity is not well understood, but it is possible to produce rancid fats by leaving them in open dishes exposed to light. Consequently, trays of lard, butter, wheat germ oil, and oleic acid (U. S. P.) were left over a radiator at 35 C. and exposed to strong daylight. By two weeks a strong flavor and odor had developed. The acidity had also increased somewhat. The results summarized in table 4 are conclusive. By comparing tables 2 and 3 with 4, it is seen that both oleic acid and lard have on becoming rancid increased their power to render vitamin E ineffective. Furthermore, good sources of vitamin E, like butter and wheat germ oil, have not only lost their curative effect [2] but have also become active antivitamins.

TABLE 4.—*Amounts of Various Rancid Fats and Oils Required to Render Ineffective a Given Amount of Wheat Germ*

Test No.	Diet Used	Grams of Fat per Gram of Germ	Grams of Germ Consumed by Each Rat	Number of Cure Animals Used	Number of Litters Born	Number of Young Born	Number of Resorptions
1059-A	44 Gm. of germ + 77 Gm. of oleic acid (exposed to air and light) mixed with the other ingredients necessary to make diet 228	1.75	11.0	4	0	0	4
1057-A	22 Gm. of germ + 77 Gm. of lard (rancid) mixed with the other ingredients necessary to make diet 228	3.5	5.5	4	0	0	4
1057-C	26 Gm. of germ + 220 Gm. of butter (rancid) mixed with the other ingredients necessary to make diet 232	8.4	6.5	4	0	0	4
1057-B	22 Gm. of germ + 77 Gm. of wheat germ oil (very old and rancid) mixed with the other ingredients necessary to make diet 228	3.5	5.5	4	0	0	4

It was shown early in the work on vitamin E [3] that high acidity in wheat germ oil did not affect the vitamin E content. It has been found in the most recent work that the antivitamin effect of fats does not parallel the free fatty acid number. For example, a sample of crude coconut oil has been obtained which has an acid titration value five times that of the lard used in this work, yet it does not prevent the birth of good litters when fed as high as 3.5 Gm. per gram of germ.[4] It also seemed desirable to check again the earlier work [1] on the destruction of vitamin E by bubbling air through wheat germ oil at 100 C. for ten hours and by autoclaving the oil at 15 pounds pressure for one hour. No deterioration was detected in the oil thus treated. It seems, therefore, that the presence of the antivitamin in fats is associated with the development of rancidity—those poorly understood changes which take place in fats on long standing. These changes seem to be hastened by warmth, light and air, but cannot be brought about in a few hours.

2. The fresh butter was fed at the same time and in the same way mixed with wheat germ. All three "cure" animals gave birth to good litters.

3. Evans, H. M., and Burr, G. O.: Memoirs of the University of California **8**: 116 (Aug.) 1927.

4. Twenty-two grams of wheat germ was mixed with 77 Gm. of a crude coconut oil (El Dorado) and then added to the other ingredients required for 1,000 Gm. of diet 228.

SEPARATION OF THE ANTIVITAMIN FROM FATS

In order to prove that the true fats and fatty acids per se were not destroying vitamin E, a separation of the active materials from the fats was necessary. An attempt was first made to rid lard completely of the destructive compounds by a single crystallization from alcohol and the removal of the alcohol on the steam bath. A purification of the oleic acid was also attempted by neutralizing the free acids with potassium hydroxide and extracting the alkaline aqueous solution of soaps with ether. Three extractions with ether were made, after which the fatty acids were again precipitated with dilute hydrochloric acid, washed and freed from ether in vacuo. It is evident from table 5 that although no purification of oleic acid is evident from the data, there is an indication that the recrystallized lard had less effect than the market product. (Compare with table 2.)

TABLE 5.—*Noneffect of Purifying Oleic Aicd and Partial Effect of Recrystallizing Lard on Their Destruction of Vitamin E in Wheat Germ*

Test No.	Diet Used	Grams of Fat per Gram of Germ	Grams of Germ Consumed by Each Rat	Number of Cure Animals Used	Number of Litters Born	Number of Young Born	Number of Resorptions
1049-B	22 Gm. of germ + 77 Gm. of oleic acid (purified) mixed with the other ingredients necessary to make diet 228	3.5	5.5	4	0	0	4
1051-A	26 Gm. of germ + 220 Gm. of lard (purified) mixed with the other ingredients necessary to make diet 228	8.4	6.5	3	2	5	1

TABLE 6.—*Concentration of the Antivitamin in the Unsaponified Fraction of Oleic Acid (Technical)**

Test No.	Curative Dose	Number of Cure Animals Used	Number of Litters Born	Number of Young Born	Number of Resorptions
1045-A	1 Gm. of wheat germ oil	4	3	21	1
1045-B	1 Gm. of wheat germ oil mixed with 1 Gm. of oleic acid (technical)	4	0	0	4
1045-C	1 Gm. of wheat germ oil mixed with 0.1 Gm. of the unsaponified fraction of oleic acid	3	0	0	3
1045-D	1 Gm. of wheat germ oil mixed with 0.1 Gm. of purified oleic acid	3	3	25	0

* The sterile rats were all kept on diet 232 and the curative dose fed on yeast in a separate dish on the day of mating.

Since the oleic acid was the highest source of the antivitamin which had been tested, a further attempt to obtain a concentrated fraction was made by the method outlined. This gave the two fractions: (1) ether extract of the potassium soaps and (2) the extracted and washed fatty acids. Most of the very strong odor goes into the ether extract. The clear-cut

results are summarized in table 6. There can be no doubt that there is a definite concentration of the active substance into a small fraction (4.6 per cent) of oleic acid (U. S. P.). A repetition of the experiment was made with somewhat modified procedure. The oleic acid was first steamed and the distillate collected and recovered in ether. This fraction was 0.44 per cent of the oleic acid. The steamed oleic acid was now made alkaline with potassium hydroxide, and the nonacid fraction was taken out with ether. This comprised 4.56 per cent of the oleic acid. The fatty acids were precipitated and recovered as usual. The effects of these fractions on wheat germ oil may be

TABLE 7.—*Concentration of the Antivitamin in the Unsaponified Fraction of Oleic Acid (U. S. P.)**

Test No.	Curative Dose	Number of Cure Animals Used	Number of Litters Born	Number of Young Born	Number of Resorptions
1055-A	1 Gm. of wheat germ oil mixed with 45 mg. of the steam volative substance from oleic acid	4	3	17	1
1055-B	1 Gm. of wheat germ oil mixed with 100 mg. of the unsaponified matter from oleic acid	3	0	0	3
1055-C	1 Gm. of wheat germ oil mixed with 1 Gm. of purified oleic acid	4	4	26	0

* The sterile rats were all kept on diet 222 and the curative dose fed in a separate dish on the yeast on the day of positive mating.

seen in table 7. Again, there was a great concentration of the antivitamin in the unsaponified fraction, while the steam distillate was not effective at the level used.

CONCLUSIONS

1. There are substances in some fats and oils which counteract the curative effect of definite amounts of vitamin E.

2. The antivitamin substances increase with rancidity but do not parallel the acid number of the fat.

3. Much of the antivitamin in commercial oleic acid can be concentrated in the unsaponified fraction.

We are not assuming actual specificity of action of the antivitamin substance or substances but are investigating the extent to which they also act against the effectiveness of the other fat soluble vitamins A and D.

Prevention of Disease.—It may justly be inquired what incentives there are which would induce physicians to expand their point of view and become more interested and more active in the prevention of disease. There are several which readily occur to me, and doubtless others exist. The most important incentive is the opportunity for service to humanity. This appeal has never been made to physicians in vain. The second incentive which may be mentioned is the fair promise of increasing remuneration. It is believed that a false sense of delicacy and false interpretation of ethics is what has stood in the way of developments along this line rather than the unwillingness of patients to pay for advice in advance of actual illness. The third item which I will mention is hardly so much an incentive as a compulsion. If I read the signs of the times aright, the time is not far distant when the public is going to demand protective advice from the physician. The time is coming, I think, when a physician will be severely criticized for failure to offer advice on hygienic matters when he has had a chance to make the necessary observations. His reply that he was employed to treat a case of rheumatism, not to criticize the family diet, will come to be considered inadequate.—Draper, W. F.: *Pub. Health Rep.* **42**:2243 (Sept. 9) 1927.

CONSIDERATIONS IN CIRRHOSIS OF THE LIVER*

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The medical student of two decades ago carried with him on leaving his alma mater a very imperfect knowledge of cirrhosis of the liver. He was altogether inadequately equipped to grapple successfully with the problems of cirrhosis as they are encountered in the practice of medicine. He had acquired a fair conception of Laënnec's [1] cirrhosis. He was familiar with the textbook picture of Hanot's [2] cirrhosis (and is probably still looking for his first case of this disease). He was aware of the existence of hemachromatosis or bronze diabetes. He was taught to be on the qui vive for syphilis of the liver but was quite uncertain as to its clinical manifestations. Since those days considerable progress has been made in the study of the anatomy and physiology of the liver; new diagnostic methods have been introduced, functional tests have been developed, and it would appear that we are now entering a new era in relation to hepatic disease.

Points of view or doctrines in medicine are important since, right or wrong, they govern action. Accuracy in diagnosis involves the better differentiation of types and frequently leads to more rational and effective treatment. New methods may yield new facts; they tend also toward more careful clinical study of disease. In medicine, clinical investigation is always essential to progress. This attitude is particularly needed at the present time in relation to cirrhosis of the liver, since hepatic disease has not been in vogue and hence has not received the attention it deserves.

ANATOMIC BASIS FOR CERTAIN CHARACTERISTICS OF CIRRHOSIS OF THE LIVER

The method of producing molds or casts of organs by injecting their channels with celloidin solutions and subsequently destroying the parenchyma by corrosives was applied by McIndoe and Counseller [3] to the study of hepatic disease. This has rendered possible a clearer understanding of the mechanical effect of certain pathologic distortions. Their work sheds considerable light on the mechanical factors in both portal and biliary cirrhosis. It emphasizes the degree of restriction of the vascular channels in the liver and the necessity for extensive collateral channels in portal cirrhosis, and makes apparent the extensive nature of the dilatation of the biliary tree in extrahepatic obstruction of the bile ducts. This affords a more adequate background for the appreciation of the functional injury that must result. Similarly the recognition of the bilateral nature of the vascular and biliary systems of the liver is of great importance in understanding lesions of the liver which are unilateral in nature or affect half of the organ preponderantly. During the last year we have encountered at least one instance each of cirrhosis of the liver, yellow atrophy and hydrohepatosis confined largely to but half of the liver. Moreover, to visualize the manner in which the portal and biliary systems intertwine

* From the Division of Medicine, Mayo Clinic and the Mayo Foundation.

1. Laënnec, R. T. H.: Translation of selected passages from De l'auscultation médiate, London, J. Bale, Sons and Danielsson, 1923.
2. Hanot, V. C.: La cirrhose hypertrophique avec ictère chronique, Paris, Rueff, 1892.
3. McIndoe, A. H., and Counseller, V. S.: Primary Carcinoma of the Liver of Possible Multicentric Origin Occurring in a Case of Portal Cirrhosis, Am. J. Path. **2**:557-565 (Nov.) 1926. Counseller, V. S., and McIndoe, A. H.: Dilatation of the Bile Ducts (Hydrohepatosis), Surg. Gynec. Obst. **43**:729-740 (Dec.) 1926.

is to comprehend the possibility of the strangling effect of one system on the other in disease. This has a bearing on mixed types of lesions.

PHYSIOLOGIC BACKGROUND FOR THE BEHAVIOR OF THE LIVER IN DISEASE

The origin of bile has been the subject of much recent investigation, and a very old controversy may now be considered as settled. Galen had a bludgeon to attack his opponents, notably Asclepiades, and he wielded it most heavily when defending his belief in the origin of the urine in the kidneys and the separation of the bile in the liver. "I do not suppose that Asclepiades," he remarks scornfully of that unscientific man, "ever saw a stone (ureteral) which had been passed by one of these sufferers, or observed that this was preceded by a sharp pain in the region between the kidneys and bladder. . . . He did not hesitate to join issue with obvious facts . . . by assuming that there were certain invisible channels opening into the bladder. It was, of course, a grand and impressive thing to do, to mistrust the obvious, and to pin one's faith in things which could not be seen.

"Also in the matter of the yellow bile, he makes an even grander and more spirited venture; for he says this is actually generated in the bile ducts, not merely separated out."

Where Galen left off, the investigation has only recently been successfully taken up. The experimental work of Whipple,[4] Mann,[5] Rous [6] and their collaborators has furnished clearer conceptions of the factors concerned in the normal function of the liver and its perversion in disease. Rous has demonstrated the changes in the character of bile following biliary obstruction and the development of hydrohepatosis. Whipple has emphasized the extrahepatic origin of bile pigments and the hematogenous origin of jaundice, and has denied the existence of an enterohepatic circulation of bilirubin. Mann, Sheard, Bollman and Baldes,[7] by means of spectrophotometric methods, have brought clinching proof of the origin of bilirubin in those organs rich in reticulo-endothelial cells and have shown the dominant rôle of the bone marrow in the production of bilirubin. Opie and Alford,[8] Graham [9] and Whipple [4] have called attention to the protection afforded by carbohydrates when the liver is injured. Mann and Magath [5] have demonstrated the development of hypoglycemia following extirpation of the liver and have emphasized the importance of glucose in combating the resulting collapse. These contributions all exercise a profound influence on our ideas of the physiopathology of hepatic disease. Unfortunately, the clinician has been unable, as yet, to utilize all the fundamental information placed at his disposal by such investigators.

The Introduction of Functional Tests.—In recent years, numerous tests of the function of the liver have been suggested. An interest extending over a period of fifteen years, and the employment of functional studies in hundreds of cases, convince me that, so far, significant success attaches only to tests of the excretory function. Tests of hepatic function are of practical value in medicine from three standpoints. Diagnostically they reveal the presence or absence of disturbed hepatic function, the presence or absence of jaundice, and its nature and degree; prognostically they afford some evidence concerning the extent of functional impairment but are of less value for predicting the course of the disease; therapeutically they afford indications for treatment, reveal factors bearing on surgical risk, and furnish the basis for individualization in treatment. No one familiar with these tests can question today their practical value in clinical medicine. The following tests are of value: (1) those for serum bilirubin (van den Bergh) or bile index; (2) for dye retention (phenoltetrachlorphthalein or bromsulphalein); (3) for bile acids in blood; (4) for coagulation time of the blood; (5) for fragility of erythrocytes, and (6) for bile or biliary products in the urine, stools or duodenal contents.

CLINICAL CLASSIFICATION OF THE CIRRHOSES OF THE LIVER

With this background we are now in a better position to approach the clinical aspects of the cirrhoses of the liver. It must be recognized that cirrhosis constitutes a late phase or even a terminal stage of various forms of hepatic disease, and not a single disease entity. It is chronic in its course. The cirrhoses result from prolonged inflammatory, degenerative or proliferative changes in the liver, brought about by a variety of etiologic agents, some of which are known. Infections, toxins, overactivity of the liver, the excessive deposition of pigments, and the obstruction of the biliary channels, one or all, may play a rôle and frequently over a long period of years. Because the liver is a part of the splenohepatic system, and not an isolated organ, the spleen is involved also in a majority of cases of cirrhosis of the liver. Either organ may be affected primarily or secondarily. Of necessity this fact tends to complicate the clinical picture and the diagnosis in the different forms of cirrhosis.

Increasing experience and continuous contact with hepatic diseases convince one of the great variations in clinical types, and how unsatisfactory is our present state of knowledge in this field. Distinctive clinical types of cirrhosis do exist; but a large proportion of cases are not diagnosed satisfactorily at the present time. This is due in part to the actual mixture of types encountered in practice and in part to defects in our teaching and in our textbooks of medicine. For instance, the textbook justly considered the standard in this country states that there are four types: the alcoholic, the hypertrophic (Hanot), the syphilitic and the capsular. Obviously, no single basis is adhered to in this classification; it involves etiologic and pathologic considerations. Biliary cirrhosis secondary to obstruction and subsequent infection is overlooked or inadequately described. Syphilis of the liver is inadequately linked up with the other forms of cirrhosis.

4. Davis, N. C., and Whipple, G. H.: The Influence of Fasting and Various Diets on the Liver Injury Effected by Chloroform Anesthesia: Papet I, Arch. Int. Med. **23**: 612-635 (May) 1919. Whipple, G. H.: The Origin and Significance of the Constituents of the Bile, Physiol. Rev. **2**: 440-459 (July) 1922.

5. Greene, C. H.; McVicar, C. S.; Snell, A. M., and Rowntree, L. G.: Diseases of the Liver: VI. A Comparative Study of Certain Tests for Hepatic Function in Cases of Cirrhosis of the Liver, Arch. Int. Med., to be published. Greene, C. H.; Snell, A. M., and Walters, Waltman: Diseases of the Liver: I. A Survey of Tests for Hepatic Function, ibid. **36**: 248-272 (Aug.) 1925. Mann, F. C., and Magath, T. B.: Studies on the Physiology of the Liver; II. The Effect of the Removal of the Liver on the Blood Sugar Level, ibid. **30**: 73-84 (July) 1922; Studies on the Physiology of the Liver: III. The Effect of Administration of Glucose in the Condition Following Total Extirpation of the Liver, ibid. **30**: 171-181 (Aug.) 1922.

6. Rous, Peyton: Biliary Aspects of Liver Disease, Am. J. M. Sc. **170**: 625-631 (Nov.) 1925.

7. Mann, F. C.; Sheard, Charles; Bollman, J. L., and Baldes, E. J.: Studies on the Physiology of the Liver: XIII. The Liver as the Site of Bilirubin Formation, Am. J. Physiol. **77**: 219-224 (June) 1926.

8. Opie, E. L., and Alford, L. B.: The Influence of Diet on Hepatic Necrosis and Toxicity of Chloroform, J. A. M. A. **62**: 895-896 (March 21) 1914.

9. Graham, E. A.: The Resistance of Pups to Late Chloroform Poisoning in Its Relation to Liver Glycogen, J. Exper. Med. **21**: 185-191, 1915.

The capsular variety is included, whereas it might be advantageously presented elsewhere.[10]

Recently, we found it extremely difficult to present our data with regard to function of the liver in cases of cirrhosis, because of the inadequacy of our present classification of the cirrhoses. From a group of more than 100 cases studied, fifty proved or certified cases were selected as a basis of discussion. Biopsy of the liver constituted the basis for diagnosis in several instances. After many revisions, the grouping indicated in the second column of table 1 was adopted for purposes of presentation. In the classification which follows, an attempt has been made to present the types, the subvarieties and etiologic factors most frequently encountered. Although still far from perfect, it will probably prove more satisfactory for clinical purposes than most classifications heretofore suggested.

In the study of hepatic disease it should be remembered that nature in the patient offers a rich array of visual evidence. Jaundice is a colorful emblem of bile retention. Collateral circulation and ascites are nature's inscription for portal obstruction. Scratch-marks furnish mute testimony of the presence of pruritus. The white stool, the dark urine testify to obstruction of the bile ducts, and the yellow or dark color of the duodenal contents to the active secretion of bile. Jaundice, although ordinarily a symbol of biliary cirrhosis, may occur in any type.

TABLE 1.—*A Clinical Classification of Cirrhosis of the Liver*

I Portal or ascitic cirrhosis	a. Portal cirrhosis with ascites and small liver (Laënnec)	Etiology	a. Primary b. Secondary to known factors Toxic: alcohol (Laënnec), copper, arsenic, spices, foreign proteins, exophthalmic goiter, eclampsia Infection: syphilis, malaria, tuberculosis, various parasites Pigment deposit: (hemochromatosis from copper) Biliary obstruction (end-stage) Splenomegaly: (Banti's disease)
	b. Portal cirrhosis with ascites and large liver		
	c. Portal cirrhosis with ascites and jaundice		
	d. Large liver without ascites as portal cirrhosis in pre-ascitic stage		
II Biliary or icteric cirrhosis	a. Biliary cirrhosis without extrahepatic obstruction	Etiology	a. Primary (Hanot)?
	b. Biliary cirrhosis with extrahepatic obstruction		b. Secondary to known agents Toxic: Infections: colon bacillus, syphilis Secondary to obstruction (gallstones, tumor, stricture, and so forth)
	c. Biliary cirrhosis with ascites (end-stage)		

PATHOLOGY OF THE CIRRHOSES OF THE LIVER

Mallory,[11] from the aspect of the pathology of cirrhosis of the liver, recognizes five types: (1) alcoholic, (2) pigmentary, (3) syphilitic, (4) infectious, and (5) toxic. He believes that these five varieties can be differentiated pathologically without great difficulty, although in his opinion good pathologists do not all concur. He says:

> I wish to mention certain effects that all five types of cirrhosis have in common. Contraction of the connective tissue in the foci of sclerosis leads to constriction of the blood vessels and of the bile ducts. Obstruction of the portal circulation causes distention and enlargement of the spleen, congestion of the gastro-intestinal tract and ascites. Dilatation of the veins to effect a collateral circulation frequently leads to the production of varices in the esophageal plexus. Rupture of one of these dilated veins may result in sudden death from extensive hemorrhage into the stomach. Obstruction to the bile ducts leads to focal bile stasis within the liver and also to jaundice.

While the older writers considered the lesion in portal cirrhosis to be a chronic productive interstitial hepatitis, Kretz [12] and MacCallum [13] have demonstrated the primary destruction of the parenchyma with subsequent regeneration. The connective tissue is in the nature of a replacement fibrosis.

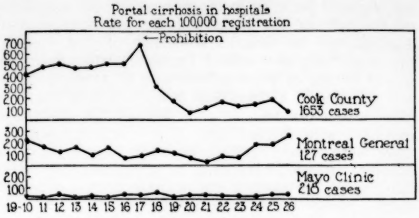

Fig. 1.—Mortality from portal cirrhosis for three institutions.

Mallory has produced pigmentary cirrhosis or hemochromatosis in animals by means of chronic copper poisoning and has raised a question as to a more general relationship of chronic copper poisoning and the hepatic cirrhoses. He believes that the copper apparatus in the manufacture of distilled liquors may be of clinical importance in relation to cirrhosis.[14] He has also demonstrated that cirrhosis of the liver may develop subsequent to acute yellow atrophy.

In relation to the pathology it is interesting to know that portal obstruction may be produced experimentally through complete and prolonged biliary obstruction. In some of our recent experiments, attempts to obstruct the portal vein failed to produce cirrhosis of the liver. On the other hand, dogs subjected to permanent biliary obstruction and kept alive for three or four months through the use of suitable diet containing much dextrose and water have developed striking ascites and also marked collateral circulation.

MORTALITY STATISTICS RELATING TO CIRRHOSIS AND ALCOHOLISM

As alcoholic cirrhosis represents the portal or Laënnec form of cirrhosis and is not familiar to the profession, it would seem that the etiologic relationship of alcohol to this disease was established. The majority of physicians accept it, but, on the other hand, many pathologists reject or question it. Certainly alcohol is not the only agent that causes the Laënnec type of cirrhosis. Even in alcoholic subjects the pathologists postulate associated etiologic factors, copper (Mallory), potassium sulphate [15] or infection. The clinical manifestations, the gross pathologic picture and, in the minds of many pathologists, even the microscopic picture is encountered in cases in which alcohol can be

10. O'Leary, P. A.; Greene, C. H., and Rowntree, L. G.: Functional Tests in Syphilis of the Liver (unpublished data).

11. Mallory, F. B.: Hemochromatosis and Chronic Poisoning with Copper, Arch. Int. Med. **37**: 336-362 (March) 1926.

12. Kretz, R.: Ueber Lebercirrhose, Wien. klin. Wchnschr. **13**: 271-276, 1900.

13. MacCallum, W. G.: Regenerative Changes in the Liver After Acute Yellow Atrophy, Johns Hopkins Hosp. Rep. **10**: 375-384, 1902; Regenerative Changes in Cirrhosis of the Liver, J. A. M. A. **43**: 649-654 (Sept. 3) 1904.

14. This is of interest in view of the early claims relating to the toxicity of distilled water. All the results obtained by Ringer and Locke in regard to the toxicity of distilled water for unicellular organisms and lower forms of animal life were subsequently shown by Naegeli to be due to copper present in the distilled water brought over in the process of distillation.

15. Lancereaux, quoted by Osler and McCrae.

excluded as a cause. I have seen cases which I was obliged to consider as primary portal cirrhosis of unknown origin. I have also seen at necropsy instances of the pure Laënnec type of cirrhosis occurring in cases of syphilis for which vigorous antisyphilitic treatment has been employed during life; at necropsy the pathologist has not been able to demonstate any evidence of the presence of syphilitic lesions. In most cases of this kind there is also an alcoholic history, and in such it may prove difficult to determine whether the disease should be ascribed to alcohol or to syphilis.

The "mortality statistics" for 1923[16] state that the death rates from alcoholism and cirrhosis of the liver in recent years are of particular interest in view of war-time prohibition measures and later national prohibition:[17]

> The registration states of 1910 show a declining rate from alcoholism from 6.3 for each 100,000 estimated population in 1917, to 1.2 in 1920, with an increase to 3.9 in 1923 and a declining rate from cirrhosis of the liver from 12.2 in 1917 to 7.6 in 1920, with a slight increase to 7.9 in 1923. States

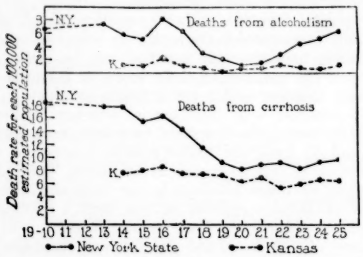

Fig. 2.—Mortality from alcoholism and cirrhosis of the liver for the states of New York and Kansas.

like Kansas, Maine, Tennessee and North Carolina, which had prohibition laws long before the war, and which already in 1917 had comparatively low mortality rates from alcoholism and cirrhosis of the liver, show for recent years either slight decreases or increases in death rates from these causes.

I have assembled some statistics on this subject which relate to the incidence of cirrhosis in hospital practice, and also to death rates in various states, provinces and countries. From an institutional point of view I present figures for Cook County Hospital,[18] Chicago, for the Montreal General Hospital,[19] and for the Mayo Clinic. In considering these curves (chart 1), it must be borne in mind that they relate to vastly different populations. Cook County represents the great charity hospital for the indigent sick in one of our largest cities, Montreal General, the charity hospital in a moderate-sized city, and the Mayo Clinic a private practice for ambulant patients in a small city in a rural district. A striking and continuous decrease coincident with prohibition is evident for Cook County, while no change is apparent at the Mayo Clinic. A moderate decrease is evident for the Montreal General Hospital, situated in a nonprohibition province, where only a mild form of legislative control has been in effect since 1917.

Figures are available for Kansas, Maine, Tennessee and North Carolina, in which prohibition existed prior to the Volstead Act. The most striking contrast in the incidence of cirrhosis of the liver and alcoholism is

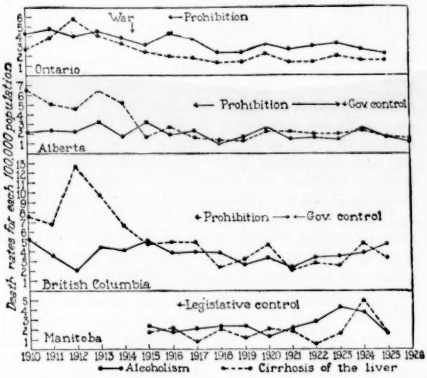

Fig. 3.—Mortality from alcoholism and cirrhosis of the liver for four Canadian provinces.

seen in a comparison of New York, which is largely urban and, if reports are true, "wet," with Kansas, which is largely rural, and supposedly "dry" (chart 2).

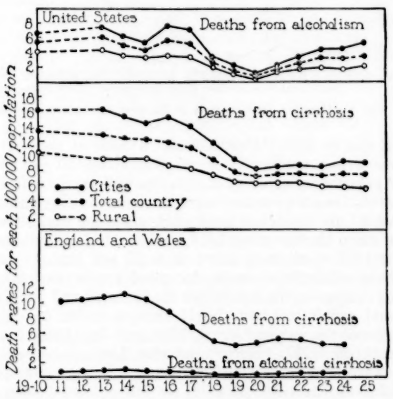
United States
Deaths from alcoholism
Deaths from cirrhosis
Cities
Total country
Rural
England and Wales
Deaths from cirrhosis
Deaths from alcoholic cirrhosis
Death rates for each 100,000 population
19-10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Fig. 4.—Mortality from alcoholism and cirrhosis of the liver for the United States, and for cirrhosis of the liver and alcoholic cirrhosis of the liver for England and Wales.

Deaths from alcoholism in New York in 1920 were approximately only one-seventh those of 1916. Cirrhosis of the liver has decreased more than 50 per cent. The figures for Kansas showed but little change, and during the last fourteen years the highest death rate for both alcoholism and cirrhosis is approximately the same as the lowest figures ever recorded for the state of New York for 1920.

16. Alcoholism and Cirrhosis of the Liver, United States Bureau of Census, Mortality Statistics, 1923, p. 53.
17. The eighteenth (prohibition) amendment to the constitution was submitted to the states by Congress, Dec. 18, 1917, ratified first in Mississippi, Jan. 8, 1918, and ratified in forty-five states by Feb. 25, 1919.
18. Submitted by Dr. Joseph L. Miller, who has previously commented on this decrease in Cook County.
19. Submitted by Dr. E. S. Mills.

I present figures also for four Canadian provinces,[20] Ontario, Alberta, British Columbia and Manitoba. A decided decrease in the incidence of alcoholism is evident in the first three provinces. Unfortunately, the data for Manitoba are lacking from 1910 to 1915. For the other three provinces, there was a decided decrease in the incidence of cirrhosis of the liver in the years 1914 to 1921 (chart 3). Here war must be considered a factor also, beginning with August, 1914.

Statistics on a national basis are available for the United States[21] and for England and Wales (chart 4).[22] In the United States alcoholism and cirrhosis are both highest for the urban population and approximately 50 per cent lower in the rural districts. Subsequent to 1917, which represents the beginning of the war and the passage of the Eighteenth Amendment, a striking decrease was observed in alcoholism and in cirrhosis of the liver, the minimal figures being attained in 1920. The incidence of death from alcoholism has been increasing steadily since 1920, that for cirrhosis remaining almost stationary. The death rate for alcoholism in 1920 was only approximately 25 per cent

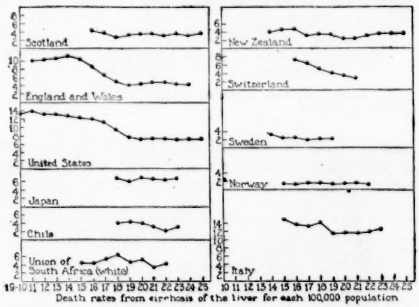

Fig. 5.—Mortality from cirrhosis of the liver for various countries.

of that in 1916. Deaths from cirrhosis of the liver in the urban population were reduced by 50 per cent. Again the influence of the war as well as of control of alcohol must enter into consideration. In England and Wales, the death rate from cirrhosis of the liver showed a sharp decline after 1914, and reached its minimum in 1919, decreasing more than 50 per cent. Deaths from alcoholic cirrhosis decreased almost two thirds. In comparing the figures for this country and for England and Wales, we should remember that the latter entered the war in August, 1914, and the United States in April, 1917. During the war there was moderate government control in England, but by no means prohibition. In both countries we see a decided decrease in deaths from alcoholism and from cirrhosis, although the decrease in England preceded the decrease in this country by three years. In the presentation of these facts, no attempt is made to determine the relative merits of prohibition and various other methods of government control.

From a national point of view I also present figures for Scotland, England, Wales, United States, Japan, Chile, South Africa, New Zealand, Sweden, Switzerland, Norway and Italy (chart 5). From this it would appear that the death rate for each 100,000 of the population from cirrhosis is highest for Italy and lowest for Norway, which had prohibition and was a neutral country. Attention might also be called to the marked decrease in the death rate in Switzerland from 1916 to 1921, although Switzerland was a neutral country, and so far as I can ascertain, had no new legislation in regard to the control of alcohol. For the interpretation of this last series of figures a better knowledge of the basis of compiling the statistics in the various countries is essential, as well as information relating to the kind of alcoholic beverages commonly used.[23]

SYPHILIS AND CIRRHOSIS OF THE LIVER

Various lesions are found in syphilis of the liver; some of these relate to syphilis itself, and others, in part at least, are the result of treatment. Among the acute lesions are diffuse syphilitic hepatitis in the early stages of the disease, and toxic hepatitis, often appearing after arsphenamine treatment.

Syphilitic hepatitis without jaundice is not infrequently encountered in the secondary stages of syphilis. Syphilitic hepatitis with jaundice may be acute, subacute or chronic, and all these forms of hepatitis may actually improve under antisyphilitic treatment. The toxic hepatitis with intrahepatic jaundice frequently develops during the course of treatment, or usually at the end of from one to six months subsequent to a course of arsenic. Gumma of the liver, "infarction" resulting in hepar lobatum, is the most characteristic form of chronic syphilis of the liver. It may be diagnosed clinically by the extreme irregularity of the surface of the liver and on serologic evidence; at necropsy it is recognized by the gross appearance. In some instances portal cirrhosis is encountered with either large or small liver, and at times alcohol is also simultaneously responsible. Occasionally, cases in which treatment was given during life for syphilis of the liver and clinically considered syphilis of the liver reveal at necropsy portal cirrhosis, the liver being indistinguishable grossly and by ordinary pathologic technic from Laënnec's type of cirrhosis.

The serologic evidence is extremely important in the diagnosis of syphilis of the liver; in 90 per cent of cases in our series and 80 per cent of the cases discussed by McRae,[24] the Wassermann test was positive. The history and the local and constitutional evidence of syphilis are extremely important, as is also information relating to arsphenamine treatment.

Jaundice is encountered in cases of syphilis of the liver much more frequently than formerly. It is interesting, on reverting to the older textbooks of medicine, to find but little reference to jaundice as a complication. Fournier[25] fails to index jaundice in his classic work on the treatment of syphilis. On the other hand, every modern department of syphilology contends almost daily with hepatitis and jaundice. There is little doubt that arsenic, which has been used for decades in the production of experimental disease of the liver, is still a potent or potential hepatic irritant

20. Kindly submitted by the secretaries of the provincial boards of health on request, Ontario.
21. From the Bureau of Vital Statistics.
22. From the Registrar-General's reports, submitted by Dr. J. W. McNee.
23. Friedrich Müller says that cirrhosis of the liver is uncommon in Münich, where beer is used almost exclusively, while in Basel, where the people from the surrounding provinces of France use particularly a great deal of absinthe, one of the most poisonous drinks, it is quite common.
24. McRae: Syphilis of the Liver, Tr. A. Am. Phys., 1926.
25. Fournier, J. A.: The Treatment of Syphilis, English translation by C. F. Marshall, ed. 2, New York, Rebman Company, 1906.

when used in the form of arsphenamine and its various derivatives. So far as the liver is concerned, mercury and iodine should be used more extensively at the onset in the treatment of syphilis, and, after the possibility of a Herxheimer reaction in the liver has been eliminated, the judicious use of the arsenical preparations is warranted.

COLLATERAL CIRCULATION

Few physicians duly appreciate the restriction of the portal channels, and the extent of the collateral circulation in advanced portal cirrhosis. This has been shown recently in a most striking manner by McIndoe, who has perfused the cirrhotic liver after its removal at necropsy. The results are represented in table 2. From these studies it would appear that at low pressures, such as those existing in the portal system, only a small proportion of the portal blood actually passes through the liver, the great bulk evading the liver and reaching the heart through collateral channels. This must be taken into account in considering the results of functional tests, especially in relation to the retention of dye. Since the collateral channels preponderate, the dye in all probability does not reach the hepatic cells as promptly or in as great concentration as normally. Hence it is removed more slowly. This may explain, partially at least, the apparent discrepancy between the evidence of dye retention by the direct method now employed in cases of cirrhosis of the liver,

TABLE 2.—*Perfusion of Liver in Case of Advanced Portal Cirrhosis and Ascites* *

Pressure, Mercury, Mm.	Time, Minutes for Each 1,000 Cc.	Amount Recovered			
		Hepatic Vein		Collateral Channels	
		Cc.	Per Cent	Cc.	Per Cent
10	...	No flow	0	No flow	0
15	...	No flow	0	No flow	0
20	7	50	5	950	95
30	5	70	7	930	93
40	2.5	88	9	912	91
50	2	90	9	910	91
60	1.5	105	10.5	895	89.5
70	1.5	105	10.5	895	89.5
80	1.25	114	11.0	886	89.0
110	1.0	136	13.0	864	86.0

* Recovery from 1 liter of 0.8 sodium chloride solution at 37 C. perfused through the liver through the portal vein.

and its excretion in large or occasionally normal amounts in the stools collected over a period of forty-eight hours as found in our earlier studies. In the course of many hours, large amounts of the dye are secreted into the bile, although the amount in the first few minutes may be decidedly decreased. However, this matter of delayed presentation to the liver is not the only factor. The liver itself plays a considerable rôle in the retention of dye since there is little evidence of a parallelism between the amount of retention and the extent of the collaterals, at least of the superficial collateral channels.

In relation to collateral circulation, attention might be called to the fact that collateral channels are more frequently encountered in the lumbar region than is usually recognized. Posture may be important in demonstrating these collateral channels. If the patient is asked to stand and to lean forward, and to increase abdominal pressure by straining as at stool, they often become quite prominent.

BILIARY CIRRHOSIS

Hanot's cirrhosis has not met with general acceptance as a disease entity. It must be exceedingly rare, at least in this country. W. J. Mayo [26] states that the description of Hanot's disease as a clinical entity has been so indefinite as to lead to a great deal of confusion, especially with hemolytic jaundice and biliary cirrhosis. There have been a few cases in the clinic (cirrhosis of the liver without any infection of the bile passages but with marked enlargement of the spleen), in four of which he removed the spleen with very considerable benefit. From the clinical standpoint he felt that this enlargement of the spleen in some way acted as the etiologic agent, although such could not be proved. Mallory has never seen a case which he could so diagnose pathologically, nor has he been able to secure specimens of Hanot's cirrhosis from any pathologists in France. However, certain clinicians of broad experience, among them Rolleston and Miller, still maintain belief in its clinical entity. It is said to be a disease of unknown origin.

The majority of cases of biliary cirrhosis, as we encounter them, are associated with the intrahepatic type of jaundice. Along with an enlarged liver and jaundice, cholangeitis is present. Infection is usually assumed to be the cause, and the colon bacillus is suspected of being the chief offender. Pruritus and pigmentation are common accompaniments. Alcoholism is usually conspicuous by its absence. The course is chronic and is occasionally interrupted by attacks of colic. Bile, usually yellow and rarely dark, is found intermittently or continuously in the duodenal contents. Portal obstruction is rare and if present is usually terminal. Syphilitic jaundice, if chronic, may be associated with biliary cirrhosis.

Biliary cirrhosis may also occur as the result of extrahepatic obstruction. Gallstones and traumatic stricture with secondary infection are most frequently responsible for this type. The course is that of cholangeitis. Colic and febrile reactions are common. The degree of jaundice fluctuates according to the degree of obstruction. Portal obstruction and ascites may develop as terminal features.

THE VALUE OF FUNCTIONAL TESTS IN CIRRHOSIS OF THE LIVER

In cirrhosis of the liver, functional tests yield information of great practical value, especially in the portal type. In the absence of jaundice, retention of dye may constitute the only functional evidence of hepatic insufficiency. It would appear to reveal the true function of the organ and to reflect the resultant or balance of the processes of degeneration and regeneration. The amount of dye retained is largely independent of the degree of ascites and of the extent of the collateral circulation. Although in occasional cases, as the ascites is brought under medical control, and the collateral circulatory channels relieved, improvement in the function of the liver is indicated. Latent jaundice is often revealed by the slightly increased level of serum bilirubin; dissociated jaundice may be so revealed at times. At other times in cases associated with prolonged pruritus, dye may be retained and bile acids in the blood may be increased. Diagnostically, the retention of the dye is of great significance; prognostically, less so, since circulatory and mechanical factors usually lead to death rather than biliary or hepatic insufficiency. From the standpoint of treatment, and especially in regard to surgical risk, the extent of the

26. Mayo, W. J.: Personal communication to the author.

dye retention is of considerable value, but only in a general way. For instance, in relation to splenectomy, in two cases in which the clinical data are almost identical, that case presenting little or no dye retention would seem to promise more favorable results with less risk.

In biliary cirrhosis, on the other hand, the serum bilirubin is a factor of greatest importance. In obstructive and intrahepatic types of jaundice, the level of the serum bilirubin is high and this is almost invariably accompanied by dye retention. Since the serum bilirubin is the product of normal metabolism and can be determined quantitatively, it affords the most acceptable criterion of biliary function. But in certain cases of biliary cirrhosis, particularly the intrahepatic type, the retention of dye is frequently out of proportion, more marked than would be expected in a case of obstructive jaundice with similar retention of bile pigment. Hence this disproportion in the results of two tests may become of diagnostic importance in some instances. The extent of retention of the dye may also afford some indication to the prognosis, but the clinical condition of the patient is of still greater significance.

The functional data have also some surgical bearing, yet here they are of secondary importance. The crucial question, so far as the indication for surgical measures in the biliary tract is concerned, is whether or not extrahepatic obstruction exists, and this is revealed most satisfactorily by the presence or absence of bile in the duodenal contents or in the stools.[27]

TABLE 3.—*Results of Functional Tests in Cirrhosis of the Liver*

		Bilirubin			Bromsulphalein			Bile Acids		
	Cases	Minimum, Mg.	Maximum, per Cent	Positive	Minimum, Mg.	Maximum, per Cent	Positive	Minimum, Mg.	Maximum, per Cent	Positive
Portal cirrhosis										
Small liver	16	0.6	2.2	3	6	60	14	3.9	8.1	2
Large liver	20	0.6	3.1	7	5	64	18	3.8	7.2	3
Biliary cirrhosis										
Obstructive type	11	1.2	7.3	7	20	44	11	2.7	14.3	4
Nonobstructive type	9	1.6	17.8	7	24	56	9	5.0	8.0	3

The bile acids of the blood are also of importance. During the last three years, Aldrich,[28] working in the medical laboratory, has developed a quantitative standardized Pettenkofer test, which, even if not entirely specific for bile salts, yields valuable information of considerable clinical significance. The method has been utilized for about two years in many experimental studies and also clinically with considerable satisfaction. In pruritus a study of bile salts is of particular interest, since the French have regarded pruritus as indicating retention of bile salts. Our studies, however, do not reveal a parallelism, at least not a direct or causal relationship of bile salts to pruritus. In jaundice, bile salts may be retained as well as serum bilirubin. Table 3 shows the maximal and minimal data in various types of cirrhosis studied.

27. In discussing functions it must be clearly kept in mind that, although these portal and biliary forms do occur and may be quite distinctive at times, the two processes are often associated, constituting a mixed form of cirrhosis. As a rule, functional tests do not afford great help in differentiating such cases. The history and particularly the sequence of events often afford more valuable information.

28. Aldrich, Martha: Studies in the Metabolism of the Bile Acids: I. A Quantitative Pettenkofer Test Applicable to the Determination of Bile Acids in the Blood (unpublished data).

As indicated, the amount of retained dye furnishes the most important information in portal types of cirrhosis and the level of serum bilirubin in biliary cirrhosis. The Pettenkofer test is confirmatory. High values for bile salts are infrequent, except in the presence of jaundice, and here they appear to bear no direct relationship either to the extent of the jaundice or to the pruritus or bradycardia.

In utilizing functional tests, one should not overlook the time-honored routine examination of the urine and stools for bile and biliary products. The duodenal contents often afford most valuable evidence concerning actual excretion of bile into the intestine in the presence of extrahepatic obstruction. Tests of fragility of erythrocytes and of coagulation time are also sometimes of great significance in various forms of cirrhosis.

PROGNOSIS IN CIRRHOSIS OF THE LIVER

In portal cirrhosis a serious prognosis is indicated, in the presence of rapid development and recurrence of ascites, profuse and recurring hemorrhage from varicose veins, purpura and marked cerebral disturbances, particularly coma. The degree of dye retention may have some prognostic significance. It should be remembered, however, that the majority of patients with portal cirrhosis do not die from hepatic insufficiency, but from complicating disorders, such as circulatory failure, hemorrhage, ascites and intercurrent diseases. In the biliary type, purpura, hemorrhage, and ascites and cerebral disturbances all have a profound bearing on prognosis.

Treatment of Cirrhosis.—The wider understanding of the cirrhoses of the liver should result in more effective treatment. It should improve the principles of medical management and surgical judgment and procedure, and result in more accurate gaging of surgical risk. Some progress is already evident.

In the prevention of cirrhosis, the following are probably of importance: (1) the prevention and control of certain infectious diseases; (2) control of alcoholic beverages and certain foodstuffs and condiments; (3) protection in the industries against the deleterious effect of phosphorus, copper, phenylhydrazine and tar, airplane dope and trinitrophenol, and (4) adequate attention to focal infection, especially in the gallbladder and appendix.

In the treatment of cirrhosis of the liver, the use of constitutional specifics has come into consideration. These include mercury, iodine, arsenic, arsphenamine and its derivatives, emetine, quinine, antimony and potassium tartrate (tartar emetic), bismuth and vermicides. Certain substances, such as water, dextrose and calcium, appear to possess a specific virtue from the standpoint of the liver itself and might be considered hepatic specifics. On the mechanical side, the relief of biliary obstruction by surgical measures is all important. Transduodenal drainage may prove of help in some instances, but appears to be of most value in cases of postarsphenamine jaundice. The relief of ascites in portal obstruction is often effected surgically by paracentesis, by omentopexy, the Talma-Morrison operation, or by splenectomy. The ascites may be dissipated also by means of medical management, through the use of merbaphen, ammonium salts, and the restriction of salt and water. Protection from hemorrhage in jaundice, particularly surgical hemorrhage, may be provided by the use of calcium, transfusions, and the administration

of adequate amounts of carbohydrates and water. Anemia is best met by prevention of hemorrhage, by transfusions and possibly by feeding liver.[29]

Symptomatically, pruritus may sometimes be relieved by courses of calomel and of emetine. In other instances, diathermy and sweating may prove of value. Local applications of emollients are usually tried and found wanting. In my experience calomel has proved the most effective agent. This is given in doses of from 0.016 to 0.03 Gm. up to 0.13 Gm. a day for periods of three or four days. Diet and sedatives may help to control gastro-intestinal disturbances.

In the treatment of hepatic insufficiency, the administration of large quantities of dextrose solution is of value. In such cases, malaise, nausea, vomiting and coma are frequently encountered. Failure of both urinary and biliary excretion may occur and the level of urea in the blood increase. These manifestations may disappear temporarily, at least, under the administration of water, and adequate amounts of dextrose and salt. The same type of toxemia may occur postoperatively, particularly following drainage of the gallbladder or biliary channels, and is probably analogous to the toxemia seen following the sudden relief of distention of the urinary bladder. The treatment outlined for hepatic insufficiency may prove of definite value.

Among the recent advances in the medical management of cirrhosis, the medical treatment of ascites is probably of most importance. Typical results of our earlier studies have already been published. Subsequent experience with this regimen serves to confirm our original conclusions as to the value of this form of treatment. The best results are obtained as a rule through the combined use of merbaphen with ammonium salts and the low ionic diet. Jacobs and Keith[30] favor the use of the nitrate (in doses of from 6 to 10 Gm. daily) because it occasions less irritation of the gastro-intestinal tract.

A record of the results in one case is presented in chart 6. It is selected because it illustrates several of the therapeutic problems of cirrhosis as well as the results obtained. This patient was considered seriously ill when first admitted. During a period of two and one-half years, he was admitted five times. On the third admission, treatment was directed solely toward the control of the anemia, the result of bleeding varices. The record indicates the increasing difficulty in the control of ascites with the progression of the disease. During the first period in the hospital, response to merbaphen was prompt and satisfactory. During the second and fourth it was necessary to add ammonium salts or hydrochloric acid and also to restrict the ingestion of water and salt. In the fifth period, little effect is evident from the combined forms of treatment.

This case also strikingly emphasizes the frequency and the importance of hemorrhage in cirrhosis. Deaths have frequently occurred from hemorrhage in cases in which the ascites was satisfactorily controlled. In fact, hemorrhage was responsible for 50 per cent of the deaths in our recent cases of portal cirrhosis; in the majority of these the ascites was adequately under control. As the bleeding comes almost invariably from the lower end of the esophagus, it would seem incumbent on the medical profession to find some means of controlling the blood supply to this area. Splenectomy and omentopexy do not suffice. This appears to be essentially a surgical problem.

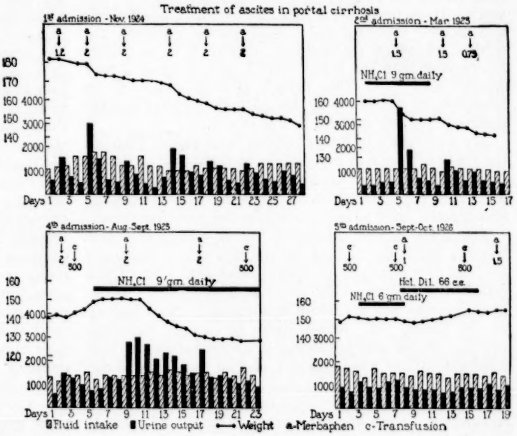

Fig. 6.—Record of the effect of treatment in a case of cirrhosis of the liver.

CONCLUSION

To me it would seem that we are now entering a new era in relation to hepatic disease. The subject of jaundice is old; it was old in the days of Hippocrates. "Enduration of the liver" and ascites were familiar problems to Galen, and cirrhosis of the liver was investigated by Vesalius, Harvey and Morgagni. To our knowledge of cirrhosis, Laënnec and Charcot made contributions of great moment. But the profession of our own times has been rather indifferent and somewhat apathetic toward hepatic disease. The subject is ripe for investigation: it awaits the touch of a Richard Bright.

29. Rowntree, L. G.; Chesney, A. M., and Marshall, E. K.: Studies in Liver Function, J. A. M. A. **63**: 1533-1537 (Oct. 31) 1914. Rowntree, L. G.; Hurwitz, S. H., and Bloomfield, A. L.: An Experimental and Clinical Study of the Value of Phenoltetrachlorphthalein as a Test for Hepatic Function, Bull. Johns Hopkins Hosp. **24**: 327-342, 1913. Rowntree, L. G.; Keith, N. M., and Barrier, C. W.: Novasurol in Treatment of Ascites in Hepatic Disease, J. A. M. A. **85**: 1187-1193 (Oct. 17) 1925.

30. Jacobs, M. F., and Keith, N. M.: The Use of Diuretics in Cardiac Edema, M. Clin. N. Amer. **10**: 605-610 (Nov.) 1926.

Posture-Training Suggestions.—The rules and principles for acquiring and maintaining the proper mechanics of the body in its anatomic correct position are so few and so simple they offer little excuse for neglect in this work. Emphasize stand tall, head up, chin in, chest high, abdomen flat, weight on balls of feet. Never overcorrect the chest, which tends to carry the shoulders too far back and to increase the lumbar curve, causing the body weight to fall on the heels. Always consider the body as a whole. Do not look only at a localized deformity because its causes and results are too far-reaching, oftentimes working round in a vicious circle. Departure from the normal poise causes abnormal strain. It must be appreciated that while the chief effect of the strain may show most markedly in one part, nevertheless, the whole body under such circumstances must be affected.—Thomas and Goldthwait: Body Mechanics and Health, p. 25.

THE JUVENILE DELINQUENT*

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In choosing this subject for a paper, I am well aware that it might better be the title of a book. There is so much that can be said about the delinquent child, and there are so many interesting phases of the subject, that I cannot hope to do more than very briefly outline a few of them. My purpose in this paper is to discuss a plan of studying the juvenile delinquent, to draw some conclusions that may be made from such a study, and to propose a plan of training that I believe will be more effective than our present system. I wish particularly to invite attention to the serious type of delinquent.

The study of delinquency in children was begun in an effort to prevent crime and to help the unfortunate. The physician, and particularly the psychiatrist, has been called on to play a very important part in this work. It is, however, a legal, sociological, psychologic and medical problem, and I shall discuss especially the medical phase of the question, though it is so closely interwoven with the others that I fear at times I may wander away into other fields. It is impossible to be interested in one phase of this question without at least having a passing interest in the others.

My experience in this work has been gained through ten years of study as psychiatrist to the house of detention in Philadelphia. Boys and girls are detained here for study and observation while their cases are being investigated prior to being heard by the municipal court.

The study of the delinquent begins with a complete history, including that of the family, and a thorough physical examination. A well trained field worker will gather information of the greatest importance. These investigations will include a medical and social history of the child. All details must be noted, including whether the parents are living, if so the nature of their employment and wages earned, and all such data as the mentality, general behavior and attitude of the parents, and the history, mentality and behavior of the brothers and sisters. Here one encounters all grades of mentality, all kinds of behavior and all brands of attitude, varying from those who are intensely interested to those who have only a passing interest or none at all. Some are very cooperative and some are most antagonistic. The kind of home must also be taken into consideration, whether it is neat, clean and attractive, or dirty, ill kept and unattractive. Whether the parents are at home during the day to supervise the child is a most important item. All too often both parents go out to work and leave the children to shift for themselves, under the supervision of a neighbor or none at all. Sometimes this is necessary but often it is not. In many cases the burden of earning a living and supervising a family of children is found to be entirely too much. In some cases no fault can be found with the home or the family, and many of these cases are most puzzling and difficult because the parents insist strongly on retaining supervision of the child despite the fact that they are failing in every effort.

Heredity is most important in studying the juvenile delinquent, as a father and mother of low mentality will certainly have children with low grade mental ability. Often a parent will be found insane who may or may not be incarcerated. One could go on almost indefinitely enumerating family weaknesses that would have something to do with delinquency. Many defects brought out through a thorough physical examination can be corrected, and those that cannot be must at least be noted as they will of necessity come into the groundwork of the case. I do not mean to imply that the correction of a physical defect will cure delinquency, but this is a problem of many angles and if the most good is to be done no stone can be left unturned. If we could have the individual's brain function in the right manner by correcting physical defects, then the problem would be somewhat simplified. I feel certain, however, that the good physical condition will often help.

Low mentality—mentality below the average—is a most important contributing factor in producing delinquency. Children with such mentality have not been taught the seriousness of crime and they are not easily taught. They are difficult to teach and their parents are too often poor teachers. Father and mother too often disagree as to methods of discipline and supervision. Idleness or lack of suitable employment for a boy reared in the city is a factor of no small moment. It is no mean task for a family living in a small house in a small street of a large city to keep a boy employed when not in school. The father is away at work and the mother has little or no control over the boy. He is allowed to go out with other boys and waste time on the streets. The old adage that idle mind is the devil's workshop is brought forcefully into play. It would not be an impossible matter to keep these boys employed, but it requires more planning and forethought than most of these parents possess. If more of them had suitable employment, I am certain that many would be able to keep out of trouble. Of course, some kinds of employment would introduce the boy to evil associates and would be worse than no employment at all. For boys or girls to resist all the temptations thrown in their way while growing up in a city requires considerable fortitude. It seems to me an application of the survival of the fittest. Those who are strong enough to resist temptation succeed and those who are not fall. We are all dependent on one another in a certain sense, and some of us are more dependent than others. In other words, some require more help than others. If this cannot be had at home, it must be provided by the commonwealth; and if it is not provided at this time, it will have to be provided some time.

When a delinquent is brought in for an examination and court hearing, the importance of the case is usually marked by the seriousness of the crime. While as a working rule this may be correct, I am sure that some of the trivial offenses of the very young are the beginnings of a serious career. Some idea of this can be gained by a thorough study of the case. The first charge brought against a child, if it is a serious one, requires most careful study. It is just at this time that our chances are the best, but it is most difficult to obtain the necessary cooperation from all concerned because it is the first offense. Here we are often mistaken in believing it to be the first offense. It may be the child's first time in court, but a thorough investigation may reveal any number of misdemeanors or criminal acts for which the child should have been brought to account but for some reason has not and has been allowed to drift.

It is well to have the child given a test at school work to determine as nearly as possible his ability along this

* Read before the Section on Nervous and Mental Diseases at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

line. One cannot depend on the grade claimed by the child. We find that he is seldom able to do what he claims. His behavior, manner, willingness and attitude in the schoolroom are also of some value.

The psychologic examination, including psychometric tests, is of considerable importance. These will usually give the psychiatrist a fair idea of the approximate mentality of the individual. It will at least afford a basis for broad classification.

Considerable information will also be gained regarding the mental make-up; whether the child is negative, stubborn, sullen or cooperative; whether he is slow or alert, and whether or not he is polite and courteous.

The psychiatrist's examination should be in the form of a friendly conversation. His attitude toward the child must be one of friendliness and sympathy if the most is to be gained. The conversation must be of such a character that the patient will take an active interest in it. This is usually not a difficult matter when the child is assured that the psychiatrist has only one motive, and that is to help him find a solution for his problems. The child should be led to talk freely about his home—his parents, brothers, sisters and associates and general environment. His past and present medical history must be discussed so far as the child is able to relate them. Injuries and operations must be considered.

The child's school work is important; one should learn whether he likes or dislikes it, and how he gets along in school. If he does not like school, what is the reason for it? Is it because evil associates lead him astray? Is he poorly dressed or otherwise conspicuous in his group? The question of whether he has the mental ability to advance in school should be considered here. This examination and the information that is gained is somewhat similar to the mental examination of a psychotic patient or one who is suffering from a psychoneurosis.

In my own experience, it has not been a difficult matter to win the confidence of these children. It is the exceptional child who will assume a negative attitude.

A discussion of the delinquencies is the last question to raise in this examination. The psychiatrist will know most what there is to know about the child's delinquency from information gained from other sources. It is important, however, for the examiner to discuss at first hand with the child the cause and motives of his delinquencies. His attitude toward his delinquencies is an important matter.

It is imperative that every delinquent child who commits a serious offense be given intensive and thorough study at the earliest possible date. Whatever disposition is made of the case, close and detailed records should be kept. In general, these children can be divided into two broad classes: those who can learn things from books and put their knowledge to practical use, and those who can learn only by working with their hands. Many subdivisions and partial subdivisions must be made; for instance, there is the group of those who can learn some things from books that will be a help to them but who must earn their living at manual work. The manual workers would again fall into many classes varying from the simplest form of manual work to those who can do skilled labor, as carpentry, woodwork of different kinds, painting or machine work. In each case there must be an analysis of the causes and motives for the delinquency and not a mere classification of the mental condition, mental age, or intelligence quotient. The case must be analyzed in a common sense sort of way by going over each part step by step, and watching and studying for causes.

For the want of thorough study, too much time is being lost in trying the delinquent at home or with relatives or at a boarding school or on a farm, and he continues to steal and becomes more hardened and better versed in the arts of criminality. Each job successfully done gives him more self-confidence and increases his potential criminality. I fully realize that many dispositions must be made on faith in the individual and that is really a trial; but, with a thorough knowledge of the delinquent, these plans will be more scientific, more practical and more successful. By going over carefully all the data that can be gathered in such a study as has been outlined—through the physical observations, the intelligence test, the school work, the family history, the mental make-up and general attitude, the personality, and the delinquent history—many important facts can be noted. The deficiencies will be evident and will at once offer a solution to the problem.

In placing the delinquent, I feel certain that we have given too much attention to teaching him with books and not enough to teaching him to work with his hands. When it is definitely proved that the delinquent will necessarily have to earn his living by manual work, the earlier he is given manual training, the greater will be our chances for success. The serious type of delinquent belonging to the manual training class should be taught a trade that is complete. He should at least be able to earn his living, and should know his trade well enough to hold a job as an efficient workman. If education proves such a panacea for so many of our ailments as we expect that it will, then the manual training education for those who need it so badly should do its part. I am one who believes that we have undoubtedly drifted too far away from the trade school and apprenticeship. In our mad rush for higher education we have lost sight of those boys and girls who are not able to keep up in their studies of books; for a certain percentage of the population to know how to do some kind of manual work in an efficient manner is certainly just as essential to our civilization as college education. We undoubtedly need more skilled workmen, and all of our workmen need to be more skilled. If the delinquent could be taught to work efficiently, in such a manner that he could be classed as good or expert in his line and could hold a job of some consequence, so that there would be a demand for his services and little likelihood of his being discharged for inefficiency or incapability, then he would be kept busy at legitimate business that would reward him with money and position. He and his family would be provided for, and there would be some very good reason for his maintaining an interest in his work, his family and society. He would not be reduced to idleness, poverty, want, shame, loss of self-respect, and criminality.

It is just as well—in fact, it is a blessing—that some of us are equipped to do only manual work, for there is plenty to do and some one has to do it. Some of us would not be contented in doing it, but others will be quite willing and happy to do it. Our task is to help them equip themselves to do their work in a better way.

The delinquent who has mental ability will profit greatly by an adjunct course of manual training. In addition to learning something worth while, he will be kept busy at legitimate work and it will help to develop his body. We are all proud of our abilities, and the more we possess and the better we are able to do our jobs, the more interest we take in doing things, the

more we earn, and the better we live. If there is one thing that is good for us all, it is plenty of work. It will content the mind and provide food and raiment for the body. The delinquent child should be kept busy, and the manual training course in addition to his regular studies makes a valuable adjunct. These boys and girls should be kept under custodial care until they know how to work and they should be subjected to a careful study with a complete review of all records by competent workers before they are sent out to a position. I believe that nearly every one is agreed that our present system of handling the delinquent is ineffective. It amounts to this at the present time: the delinquent child is tried at home either with or without probation. The child may be dependent, or the home unsuitable or inadequate. Private placement in the city or country may be made, or farm placement, orphanage or training school may be tried. For those who are seriously delinquent and who should have custodial care, more time should be given in teaching them. The course of teaching should be fitted to the particular mental type, and it should be continued long enough to teach the child how to do something. To send delinquent boys or girls away to a reform school for a few months, or a year or two, as a method of punishment, and expect them to come out reformed is certainly extreme optimism. The experience of all of us proves the inadequacy of such a plan. It serves in many instances only further to unbalance an already unstable and disgruntled individual, who will learn more criminal practices through association, and who will dislike society all the more. I do not mean to coddle these delinquents but I think that we should deal with them in a very straightforward, constructive and scientific way. A training school should certainly be a place where these children can be taught to be self-supporting, law respecting and God fearing citizens, and if they have to go there, then they should not be discharged or paroled until they have at least learned these essentials.

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ABSTRACT OF DISCUSSION

DR. CORNELIUS C. WHOLEY, Pittsburgh: Dr. McIver's important studies are being directed toward the solution of one of the most serious problems that menace society. He is dealing with the criminal, the prostitute and the various other types of individuals who become a burden on society later, while they are in the making; but how he is going to interest society to the extent of making it take adequate steps to stop them at that stage, I do not know. All one needs to do is to review the records of criminals in the penitentiaries to see the steps by which they have come up from the types which Dr. McIver has delineated—steps leading from repeated crimes to juvenile court, and thence to jail and the penitentiary. He has them in the making, and we find them there as the end-results. Perhaps it is asking too much of society to forego the pleasures of court and newspaper entertainment afforded it through the activities of its criminal class by taking more adequate preventive measures. Of course, society at large does not realize the nature of the means of solving this serious problem, and Dr. McIver is doing a splendid piece of work in endeavoring to bring it to the public notice.

DR. E. J. EMERICK, Cloumbus, Ohio: I have been studying the defective delinquent child for about twenty years, and in all that time I have been hunting for a boy who, at the age of 14 or 15 years, after having been in trouble since he was a small child, has ever been reformed. So far, I have not found one. If we are going to do anything for these juvenile delinquents it is important to get them very early—if possible, in the preschool age. Some provision should be made whereby we can care for these children indefinitely, or until such a time as they prove themselves able to assume responsibility. Some time ago, at the bureau of juvenile research, we took 100 boys of what might be called the moron type and 100 boys of the brighter type, who averaged normal or above. Chronologically, the two groups were of the same age. The duller boys had cost, in property damage and expense, about $60 a head, while the brighter boys had cost about $30 a head. We find that the most dangerous individuals are these unstable or psychopathic boys. We also took 100 boys whom we regarded as being candidates for the penitentiary; seventy-five have already gotten as far as the Boys' Industrial School; about 30 per cent have arrived at the reformatory, and quite a few have reached the penitentiary. There is only a very small proportion of that 100 who have so far escaped a penal institution. I too feel that it is important that these boys should be placed in an institution for care and training, not for punishment, until such a time as they demonstrate their ability to make good, as it is out of this material that our habitual criminals are formed.

DR. WILLIAM NELSON, St. Louis: I disapprove of the categorical classification of children who commit misdeeds into a class of delinquents. There are hardly any of us that would not be considered delinquents from the standpoint of legal terminology, because a delinquent is an individual who goes contrary to a law that society has created for us, and many of us, no doubt, have done that at more than one time in our lives. I am opposed to classifying these individuals, just as I am opposed to classifying individuals who commit adult crimes as "criminals," until we can establish in the minds of society—and in that society I am going to include physicians, because we, as physicians, have to be enlightened on this subject—the idea that there is something more fundamental in the creation of crime or in the establishment of misdeeds in children than the mere question of heredity. The sooner we establish that, the sooner we are going to get somewhere in this scheme of treatment. Dr. McIver believes that mental deficiency is a very potent factor in the causation of delinquent acts in children. I want to modify that slightly, and say that mental deficiency is only an indirect cause of this difficulty. This should be at once apparent when we recollect that in our own communities we have members who do not engage in misdeeds at all but who are mentally deficient. What we can look on is the attitude we have taken toward children who are limited in mentality, forcing them to meet certain situations that they are not equipped mentally or emotionally to meet, and having them go contrariwise because they are facing a situation which they do not understand, for they are constantly meeting situations which get them into difficulty. I should like to ask Dr. McIver to give us a figure on the intelligence quotient as he has observed it in persons committing misdeeds. We have made two surveys, at intervals of two years, in our detention house in St. Louis, and we found that these individuals had an intelligence quotient of only 70 per cent in one survey as against 69 per cent in the other survey.

DR. JOSEPH MCIVER, Philadelphia: As to Dr. Nelson's remarks about grouping all these children or classifying all of them as delinquents, I never intended to group all children who have committed a misdemeanor as delinquents. I am as much against that as anybody is; but when a boy steals one automobile after another, or when he burglarizes one house after another, or when he robs a bank, robs his employer, embezzles money by forging checks, and what not, he should be classed as a delinquent, and it was about this type of boy or girl that I spoke. I did not mean to convey the idea that mental dulness per se was the cause of delinquency, but that many children who were mentally dull became delinquent because they had not been taught rightly, because they were not easy to teach, and because they were easily led by evil associates. Regarding the intelligence quotient of the delinquent child, I have never made any personal studies of this subject because I never felt that it would lead very far. The delinquent group is made up of all classes of mentality, and I was prejudiced against the subject a little bit, which is perhaps why I never engaged in it. I felt that there was, in practically every case, a multiplicity of causes, and that these quotients should not be based on adult mentality.

MODIFIED MEASLES

THE USE OF CONVALESCENT BLOOD FROM A "FAMILY DONOR"

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AND
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The production of modified measles by convalescent serum or whole blood injections presents several problems of interest to the physician in general practice. Convalescent serum is not easily obtained except during epidemics and in large cities. Epidemics tend to recur at three year intervals, necessitating a new supply of serum for each epidemic. Except in child-caring institutions, donors for convalescent blood are difficult to find; and unless municipal health departments follow the example of the New York City Board of Health in obtaining measles serum for distribution, the physician in private practice faces a real problem in his responsibility to his young patients at the beginning of a measles epidemic. Commercial animal serum preparations may soon be available, but it is doubtful whether these will meet with general favor on account of the possibilty of undesirable serum reactions. Whole blood injections from adults who have had measles months or years before has been shown by Zingher and others to confer immunity, but the large amount of blood required may cause some objection on the part of the donor and discomfort to the recipient. Degkwitz advises the use of whole blood or serum obtained from the seventh to the seventeenth day after defervescence, and all reports of the use of the serum state that the donors were bled at this time. Unquestionably, the use of immune serum is the method of choice, but it is to be regretted that there can be no adequate source for general distribution at all times.

At the onset of a recent severe measles epidemic in Denver, we were suddenly confronted with the problems of measles prophylaxis. No serum was available and it was several weeks before we could find a sufficient number of convalescent donors to supply our urgent needs for serum. We found, of course, that the parents of the convalescent school child were unwilling that the child should contribute his blood for the sake of others in the community even though a fair compensation was offered. However, if the patient's blood was needed to protect an exposed brother or sister, no objections were raised.

The occurrence of measles epidemics at intervals of three years accounts for the preponderence of the morbidity of the disease in the age group 5 to 7 years. Most of these children have younger brothers or sisters of an age when measles is most fatal. More than 90 per cent of the deaths from measles occur under the age of 5 years, and 75 per cent under 2 years.[1]

Parents usually realize the danger of measles to young children and are willing and anxious that any possible protection be given them.

The family epidemic of measles is almost invariably inaugurated by the oldest child, who is, as a rule, attending school. Only seven of sixty-two children, or 11.3 per cent, given immune blood or serum by us in the recent epidemic were over 6 years of age, and we attempted to modify the disease in each contact in the family. Except in child-caring institutions and hospitals, the prophylaxis of measles does not imply the giving of a passive immunity but rather the production of a combined active and passive immunity in the form of "modified measles." To produce modified measles, the serum or blood must be given in not too large amounts and not too early in the incubation period. Injections given between the fifth and the eighth day after exposure have been found effective for this purpose. It occurred to us that family prophylaxis might be instituted by using the older child as donor for young brothers and sisters, and until we obtained a supply of convalescent serum we used the family donor in seven cases. The results are shown in the accompanying table.

Results of Injection with Convalescent Measles Whole Blood

Patient	Age	Days After Exposure	Amt. of Blood Cc.	Measles	Comment
1. S. E. P.	4 yrs.	7-8	8	Modified	Few blotches; not ill
2. K. P.	9 mos.	7-8	6	None	
3. J. B. B.	2½ yrs.	7-8	8	Modified	Sick 2 days; T., 102; eyes red
4. L. G.	7 yrs.	6-7	8	Modified	Delayed measles 15 days after injection
5. J. M.	8 yrs.	7-8	8	Modified	Moderate case; fever, 2½ days; cough; vomiting
6. M. E. P.	7 mos.	5-6	6	Modified	Few blotches; not ill
7. R. S.	5 yrs.	5-6	12	Modified	No fever or cough; some rash

Modified measles occurred in six of the seven cases; one patient, an infant of 9 months, did not have measles. Although conclusions may not be drawn from such a small series, we were impressed by the high incidence of modified measles (85 per cent) as compared to 41.8 per cent of modified measles in the series of fifty-five patients given convalescent serum.[2] In each of these fifty-five cases it was our aim to produce modified measles rather than prevent the disease.

Measles contacts are probably exposed from one to two days before the rash appears on the patient, and the patient's febrile period is usually terminated about three days after the rash appears unless complications develop. Thus, immune blood is available to the contacts in most cases about five to six days after exposure. The titer of immune bodies at this time is presumably less than will develop later, according to the work of Degkwitz, but a reasonably high titer of immune bodies must be present at the termination of fever. We therefore withdrew blood on the first or second day of normal temperature and injected it into the gluteal muscles of the younger children. The amount of blood injected varied from 6 to 12 cc. Two infants received 6 cc. Patient 2, aged 9 months, not having measles, and patient 6, aged 7 months, showing a typical very mild modified measles. Patient 5, aged 8 years, was given 8 cc. on the seventh to eighth day after exposure. This patient had a moderate modified measles. A better result might have been anticipated had he been given 12 cc., as was patient 7, who exhibited the morbilliform rash without rise of temperature or catarrhal symptoms.

CONCLUSIONS

When convalescent measles serum is not available, the "family donor," usually a school child, can be used effectively for the production of modified measles in the younger contacts. During the early weeks of epidemics in large communities and at all times in small communities this may be the method of choice.

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1. Zingher, Abraham: Convalescent Whole Blood Plasma and Serum in Prophylaxis of Measles, J. A. M. A. **82**: 1180 (April 12) 1924.

2. Forbes, R. P.; Green, B., and Mugrage, E. R.: Modified Measles in Private Practice, Colorado Med. **27**: 222 (July) 1927.

Clinical Notes, Suggestions and New Instruments

SENSITIZATION TO HORSE SERUM FOLLOWING TOXIN-ANTITOXIN INJECTION *

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Several cases of sensitization to horse serum as a result of the prophylactic use of diphtheria toxin-antitoxin mixture were recently reported.[1] It has been generally believed that this sensitization either does not occur or is very rare. Any possible danger from it has been considered negligible. However, a case of alarming skin sensitivity to horse serum following the injection of diphtheria toxin-antitoxin has been seen in the children's ward of the Hospital of the University of Pennsylvania.

REPORT OF CASE

F. L., a girl, aged 10½ years, admitted to Dr. Gitting's service, March 28, 1927, and discharged, April 27, 1927, had a typical mild chorea of one week's duration. The family history was negative for hay-fever, asthma, eczema or anaphylactic phenomena. Her past history included vaccination at 5 months, tonsillectomy at 1 year and measles at 3 years. Otherwise it was entirely negative. She received three injections as prophylaxis for pertussis at 7 years. She was given three injections of diphtheria toxin-antitoxin at the age of 9 years, about one year before admission.

March 31, preparatory to injecting a preparation of antistreptococcus serum therapeutically, a test dose of 0.1 cc. of crude horse serum was injected intradermally. A large wheal with surrounding erythema and induration appeared within fifteen minutes and slowly increased in size. The following day, the whole forearm was greatly swollen and tender. The swelling persisted for forty-eight hours and then gradually subsided. On the seventh day, April 7, a generalized urticarial eruption appeared. This was accompanied by severe itching, which was promptly relieved by epinephrine. The eruption was moderately severe for about thirty-six hours and lasted in all for three days. Because of the violence of the skin reaction, the patient was not given the therapeutic dose of the serum. Two weeks later she was tested again with horse serum in the form of diphtheria antitoxin. On this occasion, 0.1 cc. of serum which had been diluted 1:100 with physiologic sodium chloride solution was injected intradermally. Twenty minutes after the injection there was a wheal one-half inch (13 mm.) in diameter, surrounded by an erythematous area 1½ inches (38 mm.) in diameter. This erythema increased, until after eighteen hours there was an indurated red area measuring 2½ by 3 inches (63 by 76 mm.).

COMMENT

The patient had received foreign protein in the pertussis vaccine four years previously, but the only horse serum she had ever received was that contained in the toxin-antitoxin mixture one year before. There was no personal or family history to suggest protein sensitivity. This seems to be a case of sensitization to horse serum due to the injection of toxin-antitoxin. Skin sensitization is presumably a guide to a sensitization of the body tissues as a whole. If this patient had received the usual dose of 50 cc. of serum intramuscularly, the result would certainly have been serious, if not fatal.

This case emphasizes the necessity for testing all patients for skin sensitization before injecting any horse serum. This testing should be done regardless of any negative history of previous therapeutic injections or suggestive anaphylactic symptoms. The case also presents anew the argument that some other medium than horse serum should be used in the preparation of diphtheria toxin-antitoxin. The French seem to have had considerable success in immunizing against diphtheria by the use of toxoid.[2] This is prepared by treating diphtheria toxin with heat and formaldehyde. This treatment destroys its toxic property while retaining its antigenic action. Larson[3] reports successful immunization with diphtheria toxin which has been similarly detoxified by the addition of sodium ricinoleate. Toxin-antitoxin mixtures made with goat's serum have been tried, but apparently the goat's serum causes so much local irritation at the site of injection that its desirability is questionable. In view of the number of injections of toxin-antitoxin now being given, and the rarity of such complications as have been described, sensitization to horse serum following its use must be very uncommon. However, with the vast amount of horse serum that is now being used for therapeutic purposes, even rare cases of sensitization are to be avoided as a source of danger. It is known that very small amounts of horse serum suffice to sensitize certain individuals to that particular protein. Horse serum is present in toxin-antitoxin as now manufactured. This case presents further evidence of the advantage to be gained in using a preparation that will contain not even a trace of horse serum.

CONCLUSIONS

A case of sensitization to horse serum following the injection of toxin-antitoxin for diphtheria was observed. It is to be hoped that soon either the sodium ricinoleate or toxoid preparations, or perhaps goat's serum rather than horse serum, will be more widely used in the manufacture of preparations for use in the prophylaxis against diphtheria. In this way such cases would be entirely prevented.

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* From the Department of Pediatrics, University of Pennsylvania School of Medicine.

1. Gatewood, W. E., and Baldridge, C. W.: Tissue Hypersensitiveness Following the Administration of Toxin-Antitoxin, J. A. M. A. **88**: 1068 (April 2) 1927.

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3. Larson, W. P.; Hancock, E. W., and Eder, Howard: Antidiphtheritic Immunization Using Sodium Ricinoleate as a Detoxifying Agent, Proc. Soc. Exper. Biol. & Med. **22**: 552 (May 6) 1925.

THE TREATMENT OF CHOREA MINOR WITH EPINEPHRINE *

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In 1925, Duzar,[1] while studying blood pressure in childhood, observed that epinephrine given intravenously to children suffering from chorea caused cessation of choreiform movements for a period of from ten to fifteen seconds. As the effect of the epinephrine wore off the choreiform manifestations returned. By applying this observation empirically, he hoped to be able to cure chorea with repeated injections of epinephrine. Desiring to use large doses of epinephrine, he produced an alkalotic reaction of the blood by giving large doses of sodium bicarbonate.

Appreciating the significance of Sydenham's chorea and its allied rheumatic manifestations, and also that until this time arsenicals, bromides, nonspecific protein therapy and other medications have not proved to be adequate remedies, we welcomed Duzar's suggestion and believed it worthy of trial.

He outlined the following procedure, which he used as a routine:

1. Sodium bicarbonate, from 20 to 30 Gm., is given daily by mouth throughout the course of treatment.

2. Epinephrine, 0.1 mg., diluted with 1 cc. of physiologic sodium chloride solution, is injected intravenously daily before breakfast for four days, and also in the afternoon for the first three days. The daily intravenous injection of epinephrine before breakfast is to be continued until there are signs of improvement; then 1 cc. of epinephrine is given subcutaneously for the rest of the time. The afternoon subcutaneous injection of 1 cc. of epinephrine is started on the fourth day.

Duzar reported eight cases of chorea which he treated in this manner and cured, and three more cases with which he was equally successful but was still observing.

Summing up, he said that his patients, some of whom had been suffering from eight to ten months, after receiving the epinephrine-sodium bicarbonate treatment for three or four days were able to walk erect, in four or five days could write, in from eight to twelve days could leave their beds, and in

* From the Pediatric Department of Mount Sinai Hospital.

1. Duzar, J.: Hormonbehandlung der Chorea Minor, Klin. Wchnschr. **5**: 144 (Jan. 22) 1926.

from nine to seventeen days were well enough to leave the hospital. In addition, the general condition of the child improved and fever, if present, disappeared.

We tried as much as possible to get the patients early in the disease, appreciating that improvement takes place spontaneously about the fifth to the eighth week after onset.

Five of the eleven patients were sick from four to eight weeks before treatment was started. Seven of the eleven had cardiac or other rheumatic complications. The illness at the time of beginning treatment was severe in one, mild in one, and moderate in nine.

Our treatment varied slightly from the previously outlined course and was as follows:

1. Sodium bicarbonate, 5 Gm., from four to five times daily, was started one day before the epinephrine was given and continued throughout the course of treatment.

2. Epinephrine, 0.1 mg., diluted with 1 cc. of physiologic sodium chloride solution, was injected intravenously daily before breakfast for the first seven days. One cc. of 1:1,000 epinephrine was injected subcutaneously daily in the afternoon for the first seven days and twice daily for the next seven days, one of these injections replacing the intravenous dose after the first week.

We used Parke, Davis & Co. adrenalin for the first five cases and the Tonogen Richter solution in the six subsequent cases. Duzar used Tonogen Richter solution in all his work.

Our results in eleven cases are given in the accompanying table.

Results in Eleven Cases

Name	Age, Years	Attack	Duration of Present Illness, Weeks	Severity	Complication	Result
1. J. W.	7	2d	6	Moderate	Cardiac	Negative
2. M. N.	9	1st	8	Marked	Cardiac	Negative
3. K. M.	10	2d	7	Moderate	None	Negative
4. L. L.	11	1st	1	Moderate	Rheumatic fever	Seemed slightly improved for a few days, then became as ill as before treatment, and rheumatic nodules appeared
5. B. W.	6	1st	3	Mild	Cardiac	Negative
6. M. M.	11	2d	2	Marked	None	Three days after startling treatment, striking improvement but then became worse again and was ill for four weeks
7. N. S.	10	1st	2	Moderate	Cardiac	Condition did not begin to improve until fifth week; he developed a cardiac lesion
8. N. S.	10	1st	2	Moderate	Cardiac	Negative
9. S. P.	8	1st	3	Moderate	Cardiac	Negative; improved after six weeks, but developed pericarditis
10. L. R.	6	1st	4	Very severe	None	Negative
11. T. Y.	6	1st	1	Moderate	None	Negative

Cases 8, 9, 10 and 11 were treated strictly according to the outline given by Duzar in his first report, but the results were not better.

As can be seen from the table, of the eleven cases only one possible result was obtained, and in that case, 6, the condition changed strikingly for the better but after a few days the choreiform movements became somewhat exacerbated and the condition did not improve for another month.

That our medication was effective may be assumed from the following observations: The urine became alkaline and several of the patients showed Chvostek signs after a few days on sodium bicarbonate. The usual reaction to intravenous epinephrine was observed in every case treated; elevation of blood pressure, restlessness, vasomotor changes, as flushing of the face and circumoral pallor, bradycardia, retching and vomiting, marked throbbing headache, and precordial pain. In one case, the blood pressure rose from $^{110}/_{64}$ to $^{200}/_{120}$ and remained elevated for about one minute.

CONCLUSIONS

The treatment of chorea minor as recommended by Duzar was negative in our hands in ten out of eleven cases tried and questionable in the eleventh.

Special Article

THE INFLUENZA EPIDEMIC OF 1918: I

ENCEPHALITIS AND INFLUENZA

EDWIN O. JORDAN
CHICAGO

[EDITORIAL NOTE.—The articles in this series are chapters from a book by Edwin O. Jordan which is is being published by the American Medical Association Press assisted by a grant from the Committee on Scientific Research. The book will soon be ready for distribution.]

In the winter of 1918-1919 a disease of the central nervous system appeared suddenly in various parts of the United States. This disease seems never to have been recognized previously in this country. What is generally believed to be the same condition, however, occurred in Vienna in the winter of 1916 (Economo 1917); in France in April, 1917 (Cruchet, Moutier and Calmette 1917), and in England (Harris 1920; A. J. Hall 1918) and Germany (Moewes 1920) in the spring of 1918.

While the clinical symptoms are varied and a number of different types of the disease have been distinguished by some observers (MacNalty 1918), the pathologic lesions present a close agreement in cases studied in Austria, France, England and the United States, and are sufficient in the opinion of most writers to establish lethargic or epidemic encephalitis as a distinct disease (Flexner 1920; Stern 1923). Flexner (1924), indeed, regards the current pandemic of epidemic encephalitis as the first appearance of this disease, and does not identify the malady with any of the earlier outbreaks of brain disease known in epidemic history.

Loewe, Hirshfeld and Strauss (1919), by the inoculation of filtered emulsions of brain tissue and filtered nasopharyngeal washings from cases of epidemic encephalitis, believed that they produced lesions in monkeys and rabbits similar to those found in the human brain. Similar results were reported by other observers in various parts of the world (Ottolenghi, d'Antona and Tonietti 1920; Levaditi and Harvier 1920; Kling, Davide and Liljenquist 1921; Volpino and Racchiusa 1923), and it was concluded by some writers that the disease is caused by a living filtrable virus (McIntosh 1920).

Loewe and Strauss (1919) specifically recorded the isolation of a minute filtrable organism in the form of "globoid bodies" from the brain, nasopharyngeal washings, cerebrospinal fluids and blood in man, but Levaditi and Harvier (1920) were not able to obtain cultures from the filtrable virus with which they experimented. Various types of micrococci, such as the "diplococcus pleomorphus" of Wiesner, have been described by different observers. The presence of a green-producing streptococcus in the brain in a case of encephalitis has been noted by S. J. House (1920), and a similar organism "with marked neurotropic properties" was isolated by Rosenow (1922). The same or a similar streptococcus has been isolated from a case of epidemic encephalitis by Alice C. Evans and Freeman (1926), and on inoculation into rabbits and monkeys has produced highly suggestive symptoms and lesions. It cannot, however, be said that the etiology is entirely established.

Animal inoculation with the supposed virus of encephalitis has not given unambiguous results. The assumption of the existence of an independent virus

of herpes (cf. Doerr and Schnabel 1921; Flexner 1923; Parker 1924) has perhaps misled some workers. It now seems to be true that the virus obtained from the vesicular contents of febrile herpetic eruptions and that from cases of epidemic encephalitis possess common biologic properties. Flexner and Amoss (1925) present evidence indicating that strains of undoubted herpes virus exist in man which exhibit a marked degree of encephalitogenic power when inoculated into rabbits. The much used rabbit does not seem a favorable animal for the study of this infection, since the rather frequent occurrence of "spontaneous" or "accidental" brain lesions due to a protozoan parasite adds to the difficulty of interpretation. Some writers still champion the idea that the herpes virus and the encephalitis virus merely represent different degrees of virulence or tropic affinity of one and the same microbe, and maintain that the virus exists in an attenuated form widely distributed in the saliva of the general community before the breaking out of an encephalitis epidemic.

The relation of influenza to epidemic encephalitis has been the subject of much discussion. The apparently sudden outbreak of the latter disease, coincident with or following the 1918 influenza epidemic, has created a widespread belief in some causal connection. A disease with similar symptoms, the "nona" of Italian writers, followed in some localities the influenza pandemic of 1889-1890, and in the opinion of many writers was identical with the present malady. The Tübingen "sleeping sickness" of 1712, which likewise accompanied an epidemic of influenza, has also been considered to be the same as the modern epidemic encephalitis. Kayser-Petersen (1922), from an historical survey of influenza epidemics in the years 1580, 1658, 1673-1675, 1711-1712, 1729, 1767, 1780-1782, 1830-1833, concluded that in each of these epidemics cases of cerebral disease occurred in which the clinical picture agreed completely with that of the disease known as epidemic encephalitis. On account of these and other alleged instances of time correspondence, several attempts to explain the apparent relationship have been made as follows: 1. Epidemic encephalitis is the sequel of a certain—though small—proportion of influenza cases, and is due perhaps to the cerebral localization of the influenza virus. 2. It is the manifestation of a peculiar modification of the influenza virus. 3. An attack of influenza weakens and predisposes certain individuals to epidemic encephalitis, but the virus of the latter disease is distinct and independent. 4. It has also been maintained that the concurrence of the two maladies is accidental and without essential causal relation.

The identification of a present-day disease with a disease prevailing several decades or centuries earlier is often highly speculative, particularly when clinical symptoms are variable and not highly characteristic, and when the disease is relatively uncommon or appears only at wide intervals of time. Clinical features are frequently confusing. The early cases of epidemic encephalitis occurring in England, in 1918, were regarded by some writers as a rare form of food poisoning (botulism; cf. L. I. Harris 1918). Whatever the probability that the epidemic encephalitis of the present is the same as the "nona" of 1890 and the sleeping sickness of 1712, it is evidently impossible to establish such identity beyond all doubt. The difficulties of exact identification on clinical symptoms only, and the lack of comparability in statistical records at different periods in different parts of the world, combine to render epidemiological speculation on this point more than usually hazardous. In some recent instances confusion has almost certainly occurred. The "mysterious X disease" described by Breinl in Australia, in 1918, was regarded for a time by some writers as epidemic encephalitis, but the microscopic pathologic changes seem clearly to distinguish it from the latter (Flexner 1923). The view that an epidemiological and indeed a causal relation obtains between influenza, poliomyelitis and epidemic encephalitis (Hamer 1918-1919; Crookshank 1919) has not won wide acceptance. Still less support has been given the opinion that there is an etiologic relation between cerebrospinal meningitis and influenza.

That a connection exists between influenza and epidemic encephalitis has been inferred chiefly on the grounds that: (1) epidemic encephalitis has apparently followed influenza as a sequel in individual cases, and (2) as already pointed out, an increase in the prevalence of encephalitis sometimes accompanies or succeeds an influenza epidemic.[110] These are matters of fact on which the experience of the latest influenza epidemic may well be invoked.

There is no doubt that in some cases brain inflammation follows pretty definitely an attack of influenza; these cases have even received the designation "post-influenzal encephalitis" (Heiman 1919; cf., also, Mayer 1919; Almasio 1921). Some observers have been greatly impressed with the connection. Umber (1921); Holler (1923), and Stern (1923) are among those who believe in some kind of close relationship between epidemic encephalitis and influenza. Bonhoeffer (1921) points out that grip and encephalitis coincided in Berlin in 1920 and 1921, and is apparently inclined to regard the latter as due to a cerebral localization of the grip virus. Hagelstam (1924), from his observations on influenza and epidemic encephalitis in Helsingfors, comes to a similar conclusion. Tucker (1919), in a study of eleven cases, found the incidence of influenza so striking that he was led to believe "epidemic encephalitis lethargica is either a manifestation of a recrudescence or recurrence of influenza, or in certain cases the expression of influenza per se." Ebaugh (1924) describes an instance in which five members of a family were affected with "an influenzal condition" approximately at the same time; two of them developed acute epidemic encephalitis.

It seems, however, to be definitely established that while some cases of epidemic encephalitis follow closely on the heels of an attack of influenza, others originate independently and have no traceable connection with ordinary clinical influenza (Bassoe 1919; W. House 1920; Malone and Maitra 1920; La Fétra 1920). Happ and Mason (1921), in a study of eighty-one cases at the Johns Hopkins Hospital, found that influenza in a recognizable form had seldom preceded directly the onset of encephalitis. The report of the British ministry of health (Parsons, MacNalty and Perdrau 1922) lays stress on the general absence of complications in epidemic encephalitis, and contrasts this with influenza. The same observers were unable to discover any evi-

110. Some other evidence—not, it must be confessed, of a very convincing character—has been adduced in support of the association of lethargy and influenza. Thus, Crofton (1920) believed that the treatment of four lethargic patients with pure Pfeiffer bacillus antigen resulted in improvement. The same investigator (Crofton 1925) has reported additional instances of apparent therapeutic success with this treatment, and has cited observations on the isolation of the Pfeiffer bacillus from the blood in a high proportion (8: 11) of encephalitis cases (cf., also, Keith 1926; Zibordi 1926). Bieling and Weichbrodt (1920) conclude that the Pfeiffer bacillus plays a significant rôle in encephalitis because increased amounts of agglutinin were found in the serum of encephalitis patients; a similar increase, however, has been noted by Sharp and Jordan (1924) in the serum of measles patients, and is probably in both measles and encephalitis nothing more than a nonspecific reaction.

dence of clear and direct epidemiological or clinical relationship with influenza. Schröder and Pophal (1921) emphasize the wide diversity between the pathologic conditions in cases of epidemic encephalitis and those in cases of encephalitis following influenza. The difference is so great that they believe any causal connection between influenza and epidemic encephalitis is excluded. Bassoe (1924) and others point out that the type of encephalitis seen as a direct sequel of influenza differs from the epidemic form by a greater tendency to hemorrhage and by not selectively invading the basal ganglions. Other investigators emphasize the absolute divergence of the brain lesions in epidemic encephalitis and influenza. Luger (1926) is among those who conclude that, while there is difficulty in distinguishing the two maladies clinically, especially in the initial stages, such important differences as the high contagiousness of influenza and the almost complete absence of evidence for direct contact infection in encephalitis indicate the existence of two separate clinical entities.

The existence of cases of epidemic encephalitis "without lethargy" (Bassoe 1920) adds to the difficulty of determining the extent and relations of this malady and of evaluating statistical records. It is evident that, assuming the complete independence of the two maladies, a widely prevailing disease like influenza would naturally be followed in some instances by cases of epidemic encephalitis. There does not seem to be statistical evidence that attacks of epidemic encephalitis have occurred in notably larger proportions among persons who have recently suffered from influenza than among similar groups of the population without influenzal history. On the other hand, it is possible that an attack of encephalitis may have been preceded by an obscure or mild form of influenza which went unrecognized. According to Jaksch-Wartenhorst (1923), every form of influenza may be followed by encephalopathy, and a long period of latency may occur.

On the second point, the extent to which a numerical increase in encephalitis cases accompanies an influenza epidemic, the 1918-1923 statistics now throw some light. The first case of epidemic encephalitis in the United States about which any data are available is said to have occurred in New York City, Sept. 4, 1918 (H. F. Smith 1921). Three other cases are said to have occurred in New York in October, and others were reported in widely separated localities in November, 1918 (Wegeforth and Ayer 1919; H. F. Smith 1921). Smith (1921), in a tabulation of 122 selected cases, found that in 46 per cent there was a definite history of influenza. The sex distribution, however, showed that 60 per cent of the patients were males and 40 per cent females, whereas in influenza the attack ratio in the two sexes is about equal. In cases of epidemic encephalitis without record of a previous attack of influenza, the ratio of males to females is 1:1, while in those patients reporting a previous attack of influenza the ratio is 2.5:1. Pearl (1921), in an analysis of the data for New York City in 1919 and 1920, also reaches the conclusion that males are, to a statistically significant degree, especially susceptible to epidemic encephalitis.

In New York City, an increased prevalence of epidemic encephalitis is thought by some to have followed recent influenza epidemics (Hunt 1923). Almasio (1921) has drawn attention to the parallel course of influenza and encephalitis at Turin in the spring of 1920. Such an association does not appear to be invariable. In Chicago the reported cases of influenza and encephalitis do not run a parallel course (table 89). Making all allowance for inaccuracies and incompleteness in reporting, it is plain that the prevalence of encephalitis in Chicago, in January-March, 1921, when clinical influenza was practically absent, was fully as great as in some years when influenza was exceedingly prevalent. In February, 1921, when acute respiratory diseases were at a low ebb in Chicago, and generally

TABLE 89.—*Reported Cases of Influenza and Epidemic Encephalitis in Chicago*

	1919		1920		1921	
	Influenza	Epidemic Encephalitis	Influenza	Epidemic Encephalitis	Influenza	Epidemic Encephalitis
January	4,444	0	22,623	17	94	21
February	2,075	0	6,606	26	75	25
March	1,347	27	729	13	58	10
April	430	9	135	12	157	5
May	108	3	58	10	70	4
June	17	0	18	3	12	1
July	20	1	4	2	6	0
August	26	0	10	1	18	0
September	164	1	44	1	7	0
October	281	3	74	0	62	0
November	178	9	89	0	67	1
December	210	16	90	5	64	0
	9,300	69	30,480	90	690	67
	1922		1923		1924	
January	98	4	374	8	71	4
February	1,831	12	1,597	10	116	0
March	722	6	501	7	169	5
April	138	8	150	11	67	4
May	56	5	58	4	40	2
June	16	2	8	6	6	4
July	3	0	20	3	6	4
August	8	5	2	5	3	0
September	11	4	21	4	12	4
October	27	5	27	2	20	1
November	47	3	60	8	41	7
December	71	3	66	2	50	13
	3,068	57	2,884	70	605	48

elsewhere throughout the United States, twenty-five encephalitis cases were reported; this is more than double the number for February, 1922, and for February, 1923, months when clinical influenza was highly prevalent. The figures in table 89 indicate that while the curves of recurrent waves of influenza may agree roughly with those of epidemic encephalitis, since both diseases are likely to occur in the colder months of the year, there is no such exact correspon-

TABLE 90.—*Reported Deaths from Influenza and Epidemic Encephalitis in New York City*

	1920		1921		1922		1923	
	Influenza	Encephalitis	Influenza	Encephalitis	Influenza	Encephalitis	Influenza	Encephalitis
January	710	..	51	25	96	15	55	15
February	2,144	75	39	41	444	11	455	73
March	199	57	79	24	141	24	336	77
April	64	30	56	19	54	45	88	34
May	34	28	39	21	26	20	59	34
June	11	13	17	16	9	19	17	21
July	5	11	7	15	9	12	7	14
August	11	5	7	6	6	19	8	21
September	9	6	12	13	4	14	16	18
October	13	4	25	7	14	8	16	14
November	14	8	27	6	35	3	36	20
December	26	12	20	6	30	11	36	6
	3,240	249	379	199	868	201	1,159	347

dence as would betoken a causal relation. The reported deaths from the two diseases in New York City for the years 1920-1923 (table 90) likewise fail to show a close parallel. In Switzerland[111] very few cases of influenza were reported in 1921 (2,958) when there were 156 cases of encephalitis, while in the following year (1922), when 60,295 cases of influenza were recorded, there were only sixty-two cases of encephalitis.

111. Off. internat. d'hyg. pub. Bull. **15**: 1575, 1923.

Strümpell (1920) states that encephalitis first reached Leipzig in 1920 at a time when influenza had practically disappeared. In Portugal, in 1923, Jorge (1924) has noted that encephalitis, so far from following influenza, preceded it.

The severe and extensive outbreak of epidemic encephalitis in Great Britain, in the late spring of 1924, affords further evidence. The disease occurred first in epidemic form in Lancashire early in February, and for several months thereafter developed irregularly in widely separated districts of the British Isles. Although influenza was likewise prevalent in the early part of this period there was no obvious connection between either the amount of influenza (reported deaths) and epidemic encephalitis (reported cases) or the time at which the peak of the two diseases occurred. This is illustrated in table 91.

In some places the peak of influenza (measured by reported mortality) anticipates that of encephalitis (reported cases) by many weeks, as in London, while in others, as in Manchester, encephalitis begins to wane before influenza reaches its highest point. In Belfast, the mortality from the influenza reached its crest in the four week period from Jan. 27 to Feb. 23, 1924, but from February 10 to April 19 only one case of encephalitis was reported; later a very severe outbreak of encephalitis began in Belfast at the end of April, reaching its crest in the week ending May 17.[112] The

TABLE 91.—*Influenza Mortality and Encephalitis Morbidity In Six English Cities* *

	1924: Week Ended													
	February				March					April				May
City and Disease	2	9	16	23	1	8	15	22	29	5	12	19	26	3
London														
Epidemic encephalitis	2	4	0	2	3	1	4	10	20	17	23	33	31	50
Influenza	122	154	178	148	139	115	89	83	49	45	28	45	21	27
Bristol														
Epidemic encephalitis	0	0	0	1	0	1	1	2	1	4	8	13	8	12
Influenza	11	19	27	25	14	20	13	13	13	5	4	3	3	3
Birmingham														
Epidemic encephalitis	1	3	0	0	2	2	3	12	6	20	27	29	17	20
Influenza	6	6	12	23	25	41	38	36	32	30	21	8	6	5
Liverpool														
Epidemic encephalitis	2	2	0	0	2	0	0	4	15	4	4	3	4	6
Influenza	4	8	13	15	21	17	16	8	14	3	5	7	6	1
Manchester														
Epidemic encephalitis	1	9	13	16	22	20	23	18	15	13	10	5	5	4
Influenza	4	5	3	4	13	22	22	21	44	21	29	19	16	12
Sheffield														
Epidemic encephalitis	0	0	0	0	0	0	4	9	14	19	37	41	26	23
Influenza	3	4	5	3	6	7	9	13	14	15	10	12	13	13

* From Sydenstricker (1924). Compiled from Monthly Epidemiological Report, health section, League of Nations' Secretariat, May, 1924 (R. E. 66, p. 426). The data in this table are for cases of epidemic encephalitis and for deaths from influenza.

obviously independent course of the two maladies is suggestive of independent causation.

The difference in the rate of dispersion of influenza and encephalitis is striking and epidemiologically significant. Influenza swept across the United States from east to west in a few weeks (pp. 112), but the spread of epidemic encephalitis was much slower. In the Pacific Northwest, influenza reached its peak in the fall of 1918 as it did in the north Atlantic states. At this same time, epidemic encephalitis was occurring in New York but it did not reach the Northwest until October, 1919, when it appeared practically simultaneously in Portland, Seattle and Tacoma (W. House 1920). On the whole, while there seems to have been sometimes a certain rough agreement between the prevalence of influenza and that of epidemic encephalitis in some localities, the parallelism is not so general or so close as to preclude a reasonable doubt about any significant connection.

The relation of influenza to epidemic encephalitis may be thus summed up: 1. It does not seem possible to identify surely the present pandemic of encephalitis with nervous disorders accompanying or following the historical pandemics of influenza. In point of fact, no unusual prevalence of encephalitis appears to have been noted in the United States or in northern Europe during the influenza pandemic of 1889-1890, and the form of encephalitis that was occasionally observed seems to have been different clinically and anatomically from the present epidemic disease.[113] 2. The epidemics of encephalitis in the United States from 1918-1923 showed in some places a certain correspondence with the recurrent waves of influenza, but it is at least doubtful whether this means anything more than that both diseases were introduced about the same time and that both thrive commonly though not exclusively in cold weather. As set forth above, a detailed comparison of the reported cases of the two diseases in New York and Chicago does not strengthen the hypothesis of a genuine relationship. The same lack of correspondence has occurred in Great Britain, Portugal and other European localities. 3. Until a coincidence or close sequence of the two diseases has been more convincingly demonstrated, it seems premature to discuss the existence of a "neurotropic" influenza virus or to speculate on the "activation" of an encephalitic virus by an influenza virus, or on the nature of the encephalitic component of a "complex grippe virus." 4. A coincidence in prevalence does not prove a common cause. Even should a close time correspondence be established, it would not follow that the relation was other than an increased susceptibility to one infection produced by another unrelated infection. Possibly, smallpox vaccination during an epidemic of encephalitis may rouse to active manifestation an encephalitis virus previously existing in a latent stage (Bartiaanse 1925; Netter 1925; Camus 1925; Lucksch 1925; Brouwer 1925).[114]

The etiologically obscure disease known as epidemic hiccup has also been supposed to sustain some relationship to influenza (cf., e. g., Neel 1925). Cadham (1925), in a description of epidemic hiccup in Winnipeg, has commented on one source of confusion: "Each epidemic of singultus has been associated with an epidemic of an illness of short duration with varied symptoms, at present designated, with professional aptitude, by the blanket term 'influenza.' The clinical picture is not that of the type of case observed during the pandemic of 1918, nor that of our yearly fall and winter visitor, the acute febrile condition known as the common cold or grip." As pointed out, the relation between influenza, epidemic encephalitis and epidemic hiccup may be nothing more than the increased susceptibility to other infections, which is imparted by influenza. It may be that hiccup is merely an accompaniment of a certain "type" or "form" of influenza. "Glandular fever" also has been supposed by some to sustain some relation to influenza, but if there is any connection it may be of the nature of an increased susceptibility following an influenza attack (cf. Stalberg 1924).

(To be continued)

112. Monthly Epidemiol. Report, health section, League of Nations, July, 1924.

113. This form of encephalitis was sometimes accompanied by the presence of specific bacilli in the ventricular fluid, e. g., Pfeiffer bacillus (Nauwerck, 1895).

114. Turnbull and McIntosh (1926), however, in observations on seven cases of encephalomyelitis following vaccination, note that the only virus demonstrated in the brain and the cord was a vaccinal virus, and conclude that vaccinal encephalitis is apparently specific.

New and Nonofficial Remedies

BLUEBERRY LEAF EXTRACT

Preliminary Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

In a paper "Blueberry Leaf Extract: Physiologic and Clinical Properties in Relation to Carbohydrate Metabolism" (page 1577, this issue), read before the Section on Pathology and Physiology at the seventy-eighth annual session of the American Medical Association, F. M. Allen reports a continuation of the work of R. I. Wagner and his co-workers (Wagner, R. I., and Mark, R. E.: *Klin. Wchnschr.* **4**:1692-1693 [Aug. 27] 1925. Wagner, R. I.; Eppinger, H., and Mark, R. E.: Ibid. **4**:1870-1871 [Sept. 24] 1925) concerning the effects of an extract prepared from the leaves of *Vaccinium myrtillus* L. (Heidelbeerblätter). Both Wagner and Allen refer to the extract which they used as "Myrtillin," a name which has previously been applied to quite different products and which is therefore an undesirable designation.

In his paper, Dr. Allen refers to papers read before the Federation of the American Society for Experimental Biology and to an outline of clinical observations presented to the Association of American Physicians. Dr. Allen was asked to send, if possible, copies of these papers, so that the evidence presented therein might receive the Council's consideration, and, in case the material he used had been manufactured for him, it was suggested to Dr. Allen that he ask the firm which did this to present the product to the Council for consideration. Dr. Allen sent the manuscript of a paper, which he stated had been presented to the American Federation of the Society for Experimental Biology. He wrote that the outline presented before the Association of American Physicians contained nothing not included in his present paper. In due time, the firm of E. R. Squibb & Sons sent, at the instance of Dr. Allen, a detailed statement of the method by which the preparation used by him had been made and gave the tests that had been used to determine the potency of the preparation. The firm stated that the preparation had been supplied only to Dr. Allen and to some investigators designated by Dr. Allen, and that it was not for sale and would not be marketed unless its therapeutic usefulness were demonstrated. It was stated that a patent had been applied for by Dr. Wagner; that the rights to the patent had been assigned to the Physiatric Institute, and that the manufacture and sale of the product, if marketed, would be controlled by the institute. The firm also sent an unpublished paper, "The Action on an Extract of Blueberry Leaves (Myrtillin) Administered by Mouth, upon Normal and Depancreatized Animals, and Cases of Diabetes Mellitus," by their Dr. J. F. Anderson and Mr. J. A. Morrell.

While from the German publications it would appear that the leaves used to prepare the extract were obtained from *Vaccinium myrtillus* L., Squibb and Sons state that they believe the source of the leaves to have been *Vaccinium pennsylvanicum*, but that they have reason to believe that either the blueberry or the huckleberry leaves give an equally satisfactory product. To obtain the product the leaves are extracted with 60 per cent alcohol at a p_H 3.8 and a temperature of 60 to 70 C. for from ten to fourteen hours.

The leaves are removed and the concentration of the alcohol in the filtrate is increased to from 70 to 75 per cent, thereby precipitating some proteins and other impurities. This is again filtered, and the active principle then precipitated by the addition of ammonium sulphate to a concentration of about 1 per cent. The precipitate is dried and pulverized. The finished product is tested for its activity on dogs, either normal to determine their dextrose or sucrose tolerance or on depancreatized dogs, noting the depression of the blood sugar curve produced by 1 Gm. administered before injection of 10 Gm. of dextrose per kilogram as compared with control dogs receiving the same amount of dextrose and no drug. So far only the effect produced by 1 Gm. of product has been demonstrated, and the minimum effective dose has not yet been determined.

A member of the Council's Committee on Therapeutics, acting as referee, reported that he had examined the available evidence; and that the results thus far reported do not prove the product to have definite clinical value: while an occasional case seems to be benefited, others evidence no improvement. He points out that the product made by Squibb & Sons has been available for a short time only and that any change in tolerance may be ascribed to other factors. There is also the question of the potency of the product that has been used.

The referee noted that the animal control of potency carried out by Squibb & Sons seems to give qualitative information, but falls short quantitatively. It leaves one in doubt whether a given preparation is slightly or strikingly potent. In one institution where the product has been used, the question has come up whether the lack of results is due to the use of a preparation of less potency than that used by Dr. Allen. The standardization based on the blood sugar curves of dogs is open to question; the differences in the blood sugar curves with and without the drug might conceivably have been obtained without the use of any agent. To make a uniform product available, some other method of standardization would be desirable.

Blueberry leaf extract is said to have its chief usefulness in patients with mild diabetes; this can easily lead to misinterpretation of results. The referee is not convinced that Dr. Allen is justified in some of the statements made in his paper, such as: "Favorable results when obtained are more lasting and tend more in the direction of cure than those of any method heretofore known under any diabetic treatment." This is an extremely strong statement. The paper by Dr. Allen is enthusiastic yet cautious.

The Council decided to publish this preliminary report to bring out the possible usefulness of the blueberry leaf extract described in Dr. Allen's paper. At the same time the Council points out that thus far no standards have been developed which will insure a uniform product; that the actual value of the product in the treatment of diabetes has not yet been proved; and that such proof must come from workers who have the necessary clinical opportunities and laboratory facilities on which to base judgment.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

SULPHARSPHENAMINE (See New and Nonofficial Remedies, 1927, p. 80).

Sulpharsphenamine-DePree.—A brand of sulpharsphenamine-N. N. R.

Manufactured by DePree Laboratories, Inc., Holland, Mich. (The DePree Company, Holland, Mich., distributor), under U. S. patent 1,024,993 (April 30, 1912; expires 1929) by license of the Chemical Foundation, Inc.

Sulpharsphenamine-DePree, 0.1 Gm. Ampules.
Sulpharsphenamine-DePree, 0.15 Gm. Ampules.
Sulpharsphenamine-DePree, 0.2 Gm. Ampules.
Sulpharsphenamine-DePree, 0.3 Gm. Ampules.
Sulpharsphenamine-DePree, 0.4 Gm. Ampules.
Sulpharsphenamine-DePree, 0.45 Gm. Ampules.
Sulpharsphenamine-DePree, 0.6 Gm. Ampules.
Sulpharsphenamine-DePree, 1.0 Gm. Ampules.
Sulpharsphenamine-DePree, 3.0 Gm. Ampules.

SCARLET FEVER IMMUNITY TEST (See New and Nonofficial Remedies, 1927, p. 374).

E. R. Squibb & Sons, New York.

Scarlet Fever Streptococcus Toxin-Squibb.—(See New and Nonofficial Remedies, 1927, p. 375): This product is now marketed in packages of five vials of toxin containing, respectively, 500, 2,000, 8,000, 25,000 and 60,000 skin test doses; in packages of fifty vials of toxin, ten containing 500 skin test doses, ten containing 2,000 skin test doses, ten containing 8,000 skin test doses, ten containing 25,000 skin test doses, and ten containing 60,000 skin test doses.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

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SATURDAY, NOVEMBER 5, 1927

FOOD PREJUDICES AND FOOD FACTS

The dietary prejudices of man are both amusing and pathetic. Aside from the factor of personal preference with respect to palatability or culinary properties of food items—features that are entitled to his own consideration—the individual who decides to exclude one or another food from his regimen may be convinced that certain articles of diet are irritating or noxious in some way. The idiosyncrasies of reaction to certain food as the result of sensitization, the initiation of skin eruptions, asthma and other anaphylactic responses are too well known and substantiated to justify debate. Naturally, a person will protect himself from such discomforts on the basis of his dietary experience; and he may, as a result, gain some prejudices. These comments are directed rather to the generalization of certain individual impressions into rules of food choice for the nations.

Prejudices fostered in this way are gradually being broken down with the progress in the experimental study of nutrition. The banana has outlived its condemnation into an undervalued class of foods. Those who still proclaim it as an indigestible article—an alimentary troublemaker—have failed to learn the criteria of edibility in this wholesome fruit that even infants may now find included in their menu. Those who assail nuts in general as reprehensible inclusions in the meal all too often forget that these foods need mastication in order to become thoroughly acceptable. If one group of faddists attack the drinking of water with meals, another will defend it with almost equally cogent arguments if not "proofs." So-called "roughages" have their enthusiastic defenders and likewise their sober-minded detractors. Of late the American culinary specialty, pie, has been rescued from its defamers and placed on a pedestal of nutritive virtue; at any rate tirades against the digestibility of a well baked mixture of flour, fat and fruits no longer make a universal appeal to the devotees of dietotherapy.

And now certain fried foods—the *bête noire* of the food prescriptionists—are destined to be rescued for more general use such as they have long enjoyed among those groups of the population who merely "eat and rejoice." According to studies at the University of Chicago,[1] the behavior of the fried potato in the digestive processes is essentially a matter of the amount of the fats included with it. In fact, the starch of the boiled potato may be less readily digested than that of French fried or pan fried potato. Heating starches with fats may lead to greater thoroughness of cooking, owing to differences in the temperatures that can be applied. The Chicago tests were actually made in the human stomach. They show that frying foods in fat need not produce digestive upsets. The gastric motor mechanism of some persons is more susceptible to the inhibitory action of fats than that of others. In susceptible persons a digestive disturbance, when it occurs, is more probably due to disturbed gastric motility than to alleged decrease in the digestibility of the potato resulting from the presence of fat. In the average normal human being fried potatoes, unless steeped in fat, are no more likely to cause digestive disturbances than boiled potatoes. This statement is not to be construed as advocating the wholesale use of fried foods for health. Like the essay on roast pig, this proclamation of an experimental fact is intended merely to prevent the championship of unfounded prejudices.

ANTHRACOSIS AND SILICOSIS IN RELATION TO PULMONARY TUBERCULOSIS

In 1905, Wainwright and Nichols[2] offered strong support for the general belief that coal miners are less liable to pulmonary tuberculosis than other workers. From a study of the death certificates in Scranton, Pa., over a ten year period, they learned that pulmonary tuberculosis was the cause of death in 3.37 per cent of anthracite mine workers, as compared with 9.97 per cent for all other occupied males. They also cited the report of the United States census for 1900, which, classifying deaths according to occupations, showed that miners and quarrymen grouped together had second to the lowest death rate, 120.9 per hundred thousand. They believed on good grounds that, had quarrymen not been grouped with the miners, the rate for the latter would have been lower still.

Workers in some other dusty branches of industry, particularly those who inhale silica dust, are more than ordinarily susceptible to tuberculosis. The South African Miners' Phthisis Commission in 1903 reported a prevalence of miners' phthisis (practically all of which was tuberculous) of about 30 per cent in the gold mines. In the United States census figures just cited, marble and stone cutters, in whom the dust inhaled also has a high silica content, comprised the

1. Boggess, Bessie; and Ivy, A. C.: The Digestibility of Potatoes as Influenced by Methods of Preparation, J. Home Economics **19**: 496 (Sept.) 1927.

2. Wainwright, J. M., and Nichols, H. J.: The Relation Between Anthracosis and Pulmonary Tuberculosis, Am. J. M. Sc. **130**: 403, 1905.

occupational group with the highest mortality from tuberculosis; namely, 540.5 per hundred thousand.

Organic dusts like those in cotton factories are less likely to predispose to tuberculous infection than inorganic dusts. Among inorganic dusts carbon, gypsum, plaster of paris, cement and chalk particles are less harmful than silica particles. The reasons for these differences have been little understood because of the lack of experimental data.

A recent report by Mavrogordato [3] of the South African Institute for Medical Research indicates that the difference between phthisis-producing dust and non-phthisis-producing dust may be qualitative rather than quantitative. Since 1911 the mean dust concentration in the Witwatersrand mines has always been below 20 mg. per cubic meter, and since 1914 below 5 mg. per cubic meter. Yet the incidence of miners' phthisis, while slowly falling, is still far in excess of that in the coal mines of Pennsylvania, where Wainwright and Nichols found a mean concentration of 35.4 mg. per cubic meter. In connection with the figures of dust concentration, Mavrogordato notes that the postmortem observations in the victims of miners' phthisis are changing. Before any steps were taken to reduce dust in the mines, the disease was associated with bulky lungs of the consistency of india rubber because of fibrous tissue. Usually dropsy and cyanosis occurred and the patients died of right-sided cardiac failure. Now the lungs are usually of normal size with much less fibrous tissue. They are destroyed by the superimposed tuberculous process. Miners' phthisis causing death is now usually "silicotuberculosis rather than tuberculosilicosis."

Among the qualitative differences between silica and other dusts is the size of the particles. Air-borne silica particles are of about the same size as bacteria, ranging from 1 to 5 microns across, while other kinds of dust particles are generally larger. Mavrogordato considers the crystalline character of silica particles even more important. He found that finely divided colloidal silica is partially soluble. In the lungs it is taken up by endothelial phagocytes almost entirely rather than by polymorphonuclears. Such cells, instead of being killed and disappearing in the circulation, aggregate together and form small pseudotubercles, which he considers the "cell trap" for tubercle bacilli. While other dusts may excite fibrosis, only silica particles and dead tubercle bacilli have in his experience the property of forming pseudotubercles. The latter may be thickly set through the whole lung and thus prepare the way for the reception and retention of tubercle bacilli before any recognizable excess fibrosis appears. Kettle [4] showed that local subcutaneous areas of increased vascularity and slight tissue necrosis could be produced by intravenous injection of silica dust. When tubercle bacilli were injected later, they tended to settle in these areas. Mavrogordato demonstrated a similar selectivity of tubercle bacilli for silica lesions by obtaining extensive pulmonary tuberculosis in guinea-pigs which had been exposed to silica dust over long periods and then inoculated intraperitoneally with fixed doses of tubercle bacilli. Control guinea-pigs which were not "dusted" failed to develop pulmonary tuberculosis after similar doses of the same bacilli. He showed also that pseudotubercles and beginning fibrosis excited by silica dust predisposed to infections with other bacteria common in respiratory diseases. Such nonspecific infections are also factors in the predisposition to tuberculosis.

In attempting to account for the relative immunity of miners to tuberculosis, Wainwright and Nichols considered that a most important factor was the production of anthracosis with an increase of the connective tissue in the alveolar and interlobular septums and in the peribronchial glands. Guinea-pigs were kept for two months in a box containing a high concentration of circulating coal dust; then tubercle bacilli were injected directly into the trachea. Control guinea-pigs that had not been "dusted" were similarly injected with tubercle bacilli. Practically all the control guinea-pigs died of pulmonary tuberculosis. The "dusted" guinea-pigs developed tuberculosis of the peritracheal glands and abdominal viscera, but only a few had pulmonary lesions. Mavrogordato attempted to repeat the experiment, with negative results. Coal dust inhalation, he believes, does not influence tuberculous infection in either direction. The extensive fibrosis described by Wainwright and Nichols in anthracosis he attributes chiefly to inhalation of silica as the miners cut through rock to reach new levels. Coal dust pigmentation of the lungs and peribronchial glands is secondary to this fibrosis.

The low incidence of miners' phthisis in collieries is ascribed by Mavrogordato not to a low dust concentration, for this is higher than now obtains in the Witwatersrand mines, but to efficient ventilation with clean, dry air. Air is taken in a closed pipe from the surface to each working place, and in a closed pipe from each working place to the surface. All old connections and workings may be stopped off. Thus there is complete directional control from main inlet to main outlet and satisfactory removal of dust with a minimal use of water.

On the Witwatersrand the marked reduction of dust concentration from around 150 mg. per cubic meter before 1905 to about 2 mg. per cubic meter at present has not been an unmixed blessing. To accomplish such a result, the use of large amounts of water for dust laying was required. The presence of water in the ground favors the spread of tubercle bacilli reaching the ground in sputum, saturation of the atmosphere with fine droplets of moisture greatly favoring the

3. Mavrogordato, A.: Contributions to the Study of Miners' Phthisis, Pub. 19, South African Institute for Medical Research **2**, 1926.
4. Kettle, E. H.: The Demonstration by the "Fixation Abscess" of the Influence of Silica in Determining B. Tuberculosis Infections, Brit. J. Exper. Path. **5**: 158 (June) 1924.

inhalation of tubercle bacilli present in it. Other measures for the reduction of dust in the air of the gold mines include the limitation of blasting to once every twenty-four hours and at the end of the day shift. During the night fresh air from above is blown through to clear the atmosphere before the shift returns. The number of rock cutting machines, which are abundant dust producers, has been greatly reduced.

While the prevalence of miners' phthisis has been reduced and the life expectancy of those who have it increased, the disease has by no means been eliminated on the Witwatersrand. Mavrogordato believes that an absolute minimum of dust concentration will soon be reached. He doubts whether this will reduce miners' phthisis any more unless good control of clean, dry air currents comparable with those found in most coal mines, with elimination of much of the water now used for dust laying, is effected.

CARCINOMA AND ANEMIA

Certain cases of depletion of red blood corpuscles are usually classified as secondary or symptomatic anemia. The blood picture is characteristic and the disease condition associated with it is usually relatively mild, though there are exceptions to this rule. Both hemorrhage and hemolysis may be responsible for secondary anemias; but Richard Cabot has well stated that the presence of a clear cause remains the only reliable criterion for the recognition of the secondary type. Cancer has long been known to be responsible for secondary anemias. The origin of the hemorrhages produced by neoplasms along the alimentary tract is obvious. From the standpoint of their persistence and the intensity of the blood changes, certain long recognized features have been difficult to interpret.

Attention has long since been called to the fact that carcinoma of the proximal half of the colon has a greater tendency to the production of anemia than carcinoma of any other part of the body, with the exception of the median portion of the stomach.[1] This has recently been substantiated by the statistical inquiries of Alvarez, Judd, MacCarty and Zimmermann [2] at the Mayo Clinic, so far as carcinoma of the cecum and ascending colon has a marked tendency to produce severe grades of anemia. This tendency is progressively less marked with cancers of the transverse, the descending and the pelvic portions of the colon. It might be assumed with some propriety that these gradations are explicable on the basis of a greater loss of weight, more severe hemorrhage, or greater malignancy of the tumors in the right half of the colon. The malignancy of colonic cancers as a whole is low as compared with that of gastric cancers, and the tendency to metastasize is greater with cancer of the rectum than with that of the cecum. This assumption proves to be untenable.

The loss of the mucous membrane per se cannot be held responsible for the degree of anemia observed in carcinoma of the colon. There is nothing peculiar about that mucosa which makes it essential in any greater degree than other membranes of a similar sort. According to the Rochester clinic investigators, the important factor in the production of anemia seems to be the presence of a large ulcerated area from which blood can ooze and through which bacteria can enter. Nowhere else on the inside of the body, they aver, can ulcerating cancers be found so large as in the cecum, and nowhere else are such big raw surfaces in contact with a concentrated culture of organisms, many of them virulent and, when injected into animals, capable of producing severe anemia. A feature of practical diagnostic significance presents itself from these considerations. In persons exhibiting severe secondary anemia and a few symptoms to point to the source of the trouble, the possibility of disease of the cecum should not be overlooked. Obscurity as to the cause of the blood picture may then sometimes be dispelled.

1. Mayo, W. J.: Some of the Disputed Problems Associated with Surgery of the Large Intestine, Am. J. M. Sc. **145**: 159, 1913; Pernicious Anemia with Special Reference to the Spleen and the Large Intestine, Ann. Surg. **74**: 355 (Sept.) 1921.
2. Alvarez, W. C.; Judd, E. S.; MacCarty, W. C., and Zimmermann, A. R.: The Varying Degrees of Anemia Produced by Carcinoma in Different Parts of the Colon, Arch. Surg. **15**: 402 (Sept.) 1927.

Current Comment

BLUEBERRY LEAF EXTRACT—INTRODUCING NEW DRUGS

Elsewhere in this issue the Council on Pharmacy and Chemistry publishes a report on blueberry leaf extract. The report illustrates the praiseworthy and increasing tendency on the part of the large pharmaceutic firms to adopt the ideal method of introducing a new drug, namely, demonstration of the drug's chemical identity and uniformity; report of animal experiments giving promise of therapeutic value; report of clinical trials under the auspices of the discoverer; and provision for confirmatory study of the drug's therapeutic worth by independent investigation. On the basis of the evidence the Council finds that the drug in question has possible usefulness, but that further clinical investigation by qualified workers is needed. The firm which manufactures the drug has stated that it will not place the product on sale until its therapeutic worth has been demonstrated and is making every effort to have it further tested out by competent investigators. What a contrast to the unscientific and haphazard flooding of the market with new and untried drugs that formerly obtained here and still obtains abroad! The change has arisen from the increasingly critical attitude of the American medical profession. This, it seems reasonable to believe, is due to the faithful and persistent work of the Council on Pharmacy and Chemistry. Other illustrations of the conservative attitude on the part of drug manufacturers are easy to find. For example, Synthalin is not being generally marketed in the United States. Undoubtedly it is a potent drug; but it is potent both for harm and for

good. Its composition still remains secret, and its place in the treatment of diabetes is yet to be determined. Again, it may be noted that while an enthusiastic physician has used a liver extract for high blood pressure with what he feels are satisfactory results, his report states that the firm from which he obtained the product three years ago has not yet undertaken to place it on the market. Evidently this firm appreciates the fact that conclusive evidence for the value of liver extract in high blood pressure is lacking, and it does not care to risk its prestige by backing an uncertainty. The fact that manufacturers are adopting this scientifically conservative attitude reflects much credit on the efforts of the Council and places responsibility for the continuance and increase of such an attitude squarely on the members of the medical profession.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Personal.—Dr. Abraham J. Gottlieb will be the medical director of a sanatorium to be established at La Crescenta, near Los Angeles, for the sun and air treatment of bone and joint conditions.——Dr. Anita M. Muhl, San Diego, has been appointed head of the department of special education, a new department created by the California State Board of Education.——Dr. Cora E. S. King has been appointed director of the physical therapy department of the Hollywood Hospital, Hollywood.——Floyd DeEds, Ph.D., has resigned as assistant professor of pharmacology at Stanford University School of Medicine, San Francisco, to become pharmacologist at the Hygienic Laboratory, U. S. Public Health Service, Washington, D. C.——Dr. Magnus A. McKinnon, Placerville, has been appointed health officer of El Dorado County, succeeding the late Dr. Stephen H. Rantz.——Dr. I. A. Wheeler has been appointed city health officer of Cloverdale.

Society Cautions Members About Advertising.—At a special meeting of the council of the San Diego County Medical Society, October 14, it was voted to spread on the minutes that the council considers it not compatible with the highest medical ethics for its members to publish, have published or allow publication of news items in the daily papers regarding themselves, their actions and their attainments. The council desired also to warn the members of the society that the use of advertising cards in connection with insurance work or otherwise must be limited to the manner prescribed by the code of ethics of the state association. The secretary of the society was instructed to determine just how far a violation of the code of ethics was also a violation of the state medical practice act, and to publish in the society's bulletin facsimiles of advertising cards violating the state code of ethics together with the code and an interpretation of the state law covering such procedures, if any.

FLORIDA

Society News.—Dr. Calvin D. Christ, Orlando, addressed the Palm Beach Academy of Medicine, September 28, on "Appendiceal Abscess in Left Pelvic Fornix"; Dr. Spencer A. Folsom, Orlando, on "Résumé of Medical Literature on Diabetes Mellitus," and Dr. Louis M. Orr, Jr., Orlando, on "Spindle-Cell Sarcoma of the Kidney."——The Florida East Coast Medical Association will hold its first meeting, November 10, at West Palm Beach.——Dr. Robert M. Baker addressed the Duval County Medical Society, Jacksonville, October 4, on "Intravenous Administration of Mercurochrome in Acute Gonorrhea," and Dr. James D. Love on "Common Pediatric Errors." Dr. Noble A. Upchurch of the Jacksonville Board of Health discussed the milk situation in that city.

ILLINOIS

Personal.—Dr. Albert N. Mueller has been appointed city physician of Rock Island to succeed the late Dr. Joseph R. Hollowbush.——Dr. Ethel R. Harrington has been appointed to the staff of the division of child hygiene and public health nursing of the state department of health.

Fatal Case of Typhus.—A man, aged 62, living at Dallas City, became ill in September and died at a hospital in Fort Madison, Iowa. A specimen of blood taken by a member of the U. S. Public Health Service and examined at the U. S. Hygienic Laboratory, Washington, D. C., was positive for typhus fever. The Illinois *Health News* states that an epidemiologic investigation of the case did not disclose any source of infection.

Chicago

Dr. Abt Honored.—Northwestern University Medical School issued invitations to a convocation at the Archibald Church Library, Ward Memorial Building on the McKinlock Campus, November 4, in honor of the presentation of the cross of the legion of honor awarded by the French government to Dr. Isaac A. Abt.

Portrait of Dr. Billings Unveiled.—An oil portrait of Dr. Frank Billings was unveiled at a banquet, October 27, in the Billings Reading Room of the University of Chicago Clinics in the new building which was shown in THE JOURNAL last week. The painting was donated to the university by friends of Dr. Billings. The artist was Ralph Clarkson. The banquet was attended by about forty physicians and the portrait was accepted for the university by Vice President Woodward.

Honorary Degrees Conferred.—At the one hundred and forty-eighth convocation of the University of Chicago, Leon Mandel Assembly Hall, October 31, the honorary degree of doctor of science was conferred on the following:

Dr. William S. Thayer, professor emeritus of medicine, Johns Hopkins University School of Medicine, Baltimore, and President-Elect of the American Medical Association.
Dr. Karl Landsteiner, member of the Rockefeller Institute for Medical Research, New York.
Dr. Rufus I. Cole, director of the hospital of the Rockefeller Institute for Medical Research.
Dr. Frank Billings, professor emeritus of medicine, University of Chicago.

Lectures on Mental Hygiene.—The Illinois Society for Mental Hygiene announces a monthly lecture course on the mental hygiene of the child to be given at the City Club. Tickets may be purchased at the office of the society, 203 North Wabash Avenue, for $5, and by members for $3. The lecture, November 8, will be given by Dr. Edwin R. Eisler, Minneapolis, on "Emotional Life of the Child"; December 6, by Dr. Esther L. Richards, Baltimore, on "Parent-Child Relationships"; January 10, by Claudia Wanamaker, on "Recreation as a Mental Hygiene Measure"; February 14, by Dr. William Healy, on "The Home in Relation to Child Delinquency"; March 13, by Dr. Harold Douglas Singer, on "Adolescence"; April 10, by Thomas D. Eliot, on "Mental Hygiene and the College Student," and Dr. Lewis J. Pollock, on "The Mental Hygiene Approach."

Society News—Symposium on Poliomyelitis.—The Chicago Medical Society will present a symposium on poliomyelitis at its meeting, November 9, Dr. Peter Bassoe discussing "Diagnosis and Manifestations of the Disease in Adults"; Dr. George E. Baxter, "Clinical Manifestations in Children"; Dr. Edwin W. Ryerson, "Orthopedic Treatment of Infantile Paralysis," and Dr. Archibald L. Hoyne, "Treatment of Poliomyelitis." The speaker at the November 16 meeting will be Dr. Hugh Cabot, Ann Arbor, Mich., and his subject, "The Myth of So-Called Cathether Cystitis." The program, November 2, comprised a paper on "Recent Advances in the Therapy of Heart Failure" by Dr. Robert B. Preble, and a paper on "Ethical Consideration of Indications for Cesarean Section" by Dr. Gilbert Fitz-Patrick.——The Chicago Society of Industrial Medicine and Surgery will be addressed, November 7, Great Northern Hotel, by Dr. Philip Lewin on "Industrial Disturbances of the Foot and Ankle."——The Chicago Surgical Society met at the American College of Surgeons, November 4, and, among others, E. A. Boyden, Ph.D., read a paper on "First Concentration Phase of the Human Gallbladder."——The Chicago Laryngological and Otological Society will be addressed, November 7, Stevens Restaurant, 16 North Wabash Avenue, by Drs. Alfred Lewy and Noah Schoolman on "Agranulocytic Angina."——The Chicago Roentgen Society will meet at the Virginia Hotel, November 10. Among others, Dr. Eugene T. Leddy, Rochester, Minn., will speak on "Effect of Irradiation on the Salivary Glands," and Dr. Joe Newton Sisk, Madison, Wis., on fluoroscopic aspect of chronic gastro-intestinal lesions.

INDIANA

Personal.—Dr. Ira E. Perry, North Manchester, was elected councilor of the Eleventh District Medical Society at the meeting at Delphi, October 20, succeeding Dr. Claude S. Black, Warren, who served as councilor for sixteen years. ——Dr. and Mrs. Herbert E. Dester, Berne, formerly of Deer Creek, Okla., sailed from New York, October 19, it is reported, for Bombay, India, in which country they will be engaged as medical missionaries.——Dr. Thurman B. Rice has been appointed associate professor of bacteriology and public health, and Dr. Frank Forry, associate professor of pathology at the Indiana University School of Medicine, Indianapolis. Drs. Rice and Forry are both graduates of the university and have been connected with the medical school for several years.——Dr. Thomas Roy Cook has resigned as secretary of the Greene County Board of Health.

Society News.—The Ohio Valley Medical Association will meet, November 9-10, at Evansville; Dr. Justice F. Wynn, Evansville, is the secretary.——A meeting was held at the Blue River Country Club, Shelbyville, September 8, by members of the Rush, Hancock, Henry and Shelby County medical societies for the purpose of planning an academy for postgraduate work for members of these societies. Among others, Drs. Eugene B. Mumford and Homer G. Hamer, both of Indianapolis, read papers. A committee to organize the academy was to be appointed at the next meeting.——Dr. Thomas C. Hood, Indianapolis, was elected president of the Seventh District Medical Society at its annual meeting, Danville, October 25, succeeding Dr. Wilson T. Lawson; the principal speaker at this meeting was Dr. Granville S. Hanes, clinical professor of proctology, University of Louisville (Ky.) School of Medicine.

Better Babies Activities.—With the annual growth of better baby contests came a generous gift from Mr. J. E. Oliver, South Bend, to assist the state board of agriculture in providing a building for demonstrations in the care of infants and for their examination on the state fair grounds at Indianapolis. It is a one story structure, with an abundance of glass windows with wide intersecting corridors and four rooms. There is an examination room for contest babies and preschool children, exhibits of conveniences in baby care, a nursery where babies may be cared for by nurses, a diet kitchen, and a playroom and drinking fountain. Near the building is a playground, with swings and other equipment. West of this building is a Babies Contest Building similar in design to the Better Babies Building and for which the state legislature provided $5,000 to supplement an appropriation made by the state board of agriculture. The two well equipped, attractive buildings and a playground are devoted exclusively to the education of the public in child health needs. During the week of the fair, nearly the entire staff of the child hygiene division of the state board of health, assisted by physicians, nurses, clerks, and representatives of the Indianapolis *News*, were on duty at these buildings. There were 1,292 eligible babies entered in the 1927 contest; their examination by physicians and others was witnessed by thousands of persons.

IOWA

Barbers Licensed by Health Department.—Every person engaged in barbering in Iowa after October 3 must have a license from the state department of health which he must display in his place of business. Persons who were barbering on July 4 were entitled to a license under the exemption clause of the law for a fee of $3, but the exemption period expired October 2, and those not licensed then must take an examination which will cost $10. It is estimated that there are more than 7,000 barbers in the state.

Society News.—Dr. Gordon F. Harkness, Davenport, read a paper on "Nonoperative Indications in Mastoiditis" before the Central Wisconsin Society of Ophthalmology at Eau Claire, September 22.——Dr. and Mrs. George E. Krepelka, Stacyville, recently entertained the members of the Mitchell County Medical Society and their wives at a dinner, previous to a scientific meeting at a local hospital in Stacyville.——The September meeting of the Ringgold County Medical Society was held in the Methodist Episcopal Church, Mount Ayr, September 30, where a goiter clinic was conducted by Dr. Christian B. Luginbuhl, Des Moines; the October 25 meeting of the society was held in the new court house, where a heart and lung clinic was held under the direction of the Iowa Tuberculosis Association.

KENTUCKY

State Medical Election.—At the annual meeting of the Kentucky Medical Association, Owensboro, October 3-6, Dr. John H. Blackburn, Bowling Green, was elected president-elect and Drs. Philip F. Barbour, Louisville, Ira Z. Barber, Princeton, and Charles N. Kavanaugh, Lexington, vice presidents. Dr. R. Julian Estill, Lexington, is president this year. The next annual meeting will be held in Richmond. Mrs. James T. Reddick, Paducah, was made president-elect of the woman's auxiliary.

Personal.—Dr. Henry T. Alexander, Fulton, and Dr. Vernon Blythe, Paducah, took the oath of office as members of the state board of health, October 4, the former succeeding the late Dr. George T. Fuller, Mayfield, and the latter succeeding Dr. Van A. Stilley, Benton.——Dr. John Todd has been appointed health officer of Newport to succeed Dr. William A. Krieger; Dr. Todd formerly was health officer of Newport.——Dr. Judd E. Hammond has been appointed city physician of Lexington to succeed Dr. James Clyde Vanneter, who recently resigned to accept a position with the Ohio State Board of Health at Columbus.

MASSACHUSETTS

Personal.—Dr. Charles A. Drew, superintendent, city hospital, Worcester, has resigned, effective, November 1, after about eighteen years' service.——Dr. John A. C. McLean has been appointed a member of the council of the Massachusetts Medical Society to succeed the late Dr. Herbert E. Buffum, and Dr. Simon F. Curran was appointed a member to succeed Dr. Horace D. Arnold.——Dr. Mark H. Joress, for several years assistant physician at the Rutland State Sanatorium, Rutland, is to be assistant in Tufts College Medical School, Boston, and an examiner in tuberculosis for the Boston Health Department.

Society News.—Dr. Milton J. Rosenau, professor of preventive medicine and hygiene, Medical School of Harvard University, Boston, spoke on "Our Poliomyelitis Problem" before the Massachusetts Association of Boards of Health, Hotel Bellevue, Boston, October 28, and Dr. William L. Aycock, member of the Harvard Infantile Commission, on "Epidemiology of Poliomyelitis." Physicians were invited to attend.——Dr. Charles L. Connor, Montreal, Que., discussed the "Recent Typhoid Epidemic in Montreal" before the Harvard Medical Society at the Peter Bent Brigham Hospital, Boston, October 25, and Dr. Henry A. Christian, Boston, "Water-Borne Epidemic of Typhoid in Salem, Ohio."——The Suffolk District Medical Society met at the Boston Medical Library, October 26, where Dr. Allen K. Krause, Baltimore, gave an address on "Tuberculosis and the Medical Profession."

MINNESOTA

Personal.—Dr. Robert E. Fricke has been appointed associate in the section on radium therapy of the Mayo Clinic. Dr. Fricke, since 1920, has been engaged in similar work at the Howard A. Kelly Hospital, Baltimore.——Dr. Jacob Markowitz, Toronto, has come to the Mayo Foundation as chief assistant in the division of experimental surgery and pathology. Dr. Markowitz has been engaged in teaching at the University of Toronto.

Annual Meeting of District Society.—About thirty-five physicians attended the annual meeting of the Camp Release District Medical Society, Olivia, October 13, under the presidency of Dr. Adolph A. Passer. Dr. William F. Braasch, Rochester, president of the state medical society, gave an address on "Renal Lithiasis," and gave another address on the work of the state society for the year. A paper was read by Dr. Rood Taylor, Minneapolis, on "Jaundice in Infants and Children"; Dr. Taylor also held a pediatric clinic, and Dr. Charles N. Hensel, St. Paul, a cardiac clinic; Dr. Ralph C. Adams, Bird Island, spoke on "The Management of the County Indigent." The society sent a bouquet and its best wishes to Dr. Reuben D. Zimbeck, Maynard, who has been ill for three months, and at the business session reelected Dr. Passer president; Dr. M. Alpheus Burns, Milan, was made vice president, and Dr. Le Roy J. Holmberg, Canby, secretary. The society was entertained at dinner at the home of Dr. and Mrs. Passer.

MISSISSIPPI

Society News.—At the quarterly meeting of the Homochitto Valley Medical Society, Natchez, October 13, Dr. John Darrington, president of the state medical society, gave an address on the work of the state society, and Dr. Charles T. Chamberlain read a paper on "A Plea for More Accurate Diagnosis in Routine Surgical Work." Dr. L. W. Walker was elected president of the society to succeed Dr. William R. Brumfield. —— Dr. Julius Crisler read a paper on "The Toxemia of Intestinal Obstruction" before the Central Medical Society, Jackson, September 30.

Public Health Items.—Full-time cooperative health departments have been organized since July 1 in Sunflower, Humphreys, Issaquena, Yazoo and Warren counties, making a total of twenty-three full-time county health departments in operation, and two others are to begin full-time work, January 1.——Twelve cities and towns of Mississippi adopted the standard milk ordinance during July and August and the first half of September.——A train, called the "Know Mississippi Better Train," made a sixteen-day tour, recently, of twelve states in the West, in ten of which the state health officer or a representative met the state health officer of Mississippi, who was thus given an opportunity to discuss public health programs in other communities.

NEBRASKA

Medical Exhibit at State Fair.—Following the publication, October 15, of an item on the exhibit of the Nebraska State Medical Society at the state fair, the picture shown here was received. It illustrates the arrangement and extent of the

First exhibit of medical society at the state fair.

exhibit and the number of persons detailed to explain it to the people. The exhibit was attended by about 5,000 persons; lectures were given almost continuously on infectious diseases, vaccination, immunization and other subjects. The house of delegates of the state society, which approved an appropriation of $500 for this exhibit, probably will provide for a larger exhibit at the fair next year.

NEW JERSEY

Society News.—Dr. Percy S. Pelouze, Philadelphia, addressed the Camden County Medical Society, Camden, September 13, on "Some Bladder Symptoms."——Among others, Dr. Hobart A. Hare, professor of therapeutics and materia medica, Jefferson Medical College, Philadelphia, addressed the Gloucester County Medical Society, September 15, at the Oak Valley Country Club.

A Million for a Hospital and Home for Crippled Children. The New York *Times* announces that Mr. A. E. Fitkin has set aside $1,000,000 to build and endow a hospital and home for crippled children on the state highway, between Eatontown and Freehold in Shrewsbury Township, to be known as the Raleigh Fitkin Memorial Institution in memory of his son who died twenty-three years ago. A self-sustaining farm will be operated in connection with the institution which will endeavor not only to improve the physical condition of crippled children, but to give them an education. The building is to cost not less than $350,000; the remainder of the gift will be used to place the institution in operation. There will be no connection between the home and the hospital and any other institution. Mr. Fitkin recently disposed of large holdings in public utilities and purchased a seat on the New York Stock Exchange.

NEW YORK

Society News.—Dr. Douglas Quick addressed Kings County Medical Society, October 14, on "Radium in the Treatment of Cancer."——Dr. Wilder G. Penfield addressed the Medical Society of the County of New York, October 24, on "A Specific Treatment for Chronic Meningeal (Traumatic) Headache," illustrated with lantern slides, and Dr. Karl M. Vogel on "Significance of Arsenic in the Excretions."—— Dr. Howard Fox addressed the Medical Association of the Greater City of New York, October 17, on "Treatment of Skin Diseases."——Among others, Dr. George A. Wyeth addressed the Yorkville Medical Society, October 17, on "Extension of the Surgery of Neoplastic Diseases by Electrothermic Methods."——Dr. George M. MacKee addressed the American Stomatological Association, October 19, on "Syphilis of the Mouth."——Dr. Dean Lewis, Johns Hopkins University School of Medicine, Baltimore, gave the address in surgery at the thirty-seventh annual meeting of the New York and New England Association of Railway Surgeons, and Dr. Walter A. Bastedo, Columbia University College of Physicians and Surgeons, New York, the address in medicine, October 22.——Dr. Howard A. Kelly, emeritus professor of gynecology, Johns Hopkins University School of Medicine, Baltimore, addressed a joint meeting of the Medical Society of the County of Erie and the Buffalo Academy of Medicine, October 18, on "John Hunter and His Time."

New York City

Annual Discourse by Professor Dewey.—John Dewey, Ph.D., professor of philosophy, Teachers College, Columbia University, will give the eighty-first annual discourse of the New York Academy of Medicine at the academy's building, Fifth Avenue and One Hundred and Third Street, November 17, 8:30 o'clock. Professor Dewey's subject will be "Mind and Body."

Opening of Medical School.—At the opening of the sixty-ninth year of the Long Island College Hospital, Brooklyn, it was announced that the freshman class of 123 students was selected from more than 800 applicants. Among the freshmen are thirty-nine, it is reported, who have college degrees. There are three women. At the opening exercises, September 27, James C. Egbert, Ph.D., president of the college, introduced Dr. Jaques C. Rushmore, whose address was on "Relation of the Primary Senses to Book Knowledge in Medicine."

Movement to Standardize Laboratory Procedures. — The cooperation of the medical profession is requested by the newly organized New York Association of Diagnostic Laboratories in the creation of a research laboratory for the purpose of standardizing methods and procedures of diagnostic laboratories. Among the other objects of the organization are the elevation of the standards of diagnostic laboratories and the establishment of a closer relationship between the medical and allied professions. The secretary is Mr. A. C. Weinberger, 622 East One Hundred and Sixty-Third Street, New York.

Death of Dean Jackson.—Holmes Condict Jackson, Ph.D., dean of the New York College of Dentistry, died, October 25, at the Harbor Sanitarium after an illness of months. Dr. Jackson was formerly professor of physiology at the New York University and Bellevue Hospital Medical College, and director of laboratories at Albany Medical College. He was a contributor to professional journals and the author of a "Manual of Physiological Chemistry" and "Laboratory Exercises in Physiology." He was selected in 1925 as the first dean of the New York College of Dentistry when that school was reorganized and taken over by New York University. His aim in dental education has been to bring about a combination between the medical and dental branches for more extensive research.

Periodic Health Examinations for School Children.—The city commissioner of health has requested about 1,300 physicians practicing on the east side as a part of the Bellevue-Yorkville District Health Demonstration to examine school children brought to them in response to a special appeal to parents who can afford to pay for an examination. Heretofore the medical inspectors in the school have examined nearly all newly admitted students, but this year, thus far, about 12.5 per cent of the new pupils have been examined by family physicians. The new arrangement will make it

possible for both groups of children to receive more care. The medical staff of the health department will be able to give more time to children whose parents are unable to pay. The board of education and the practicing physicians have cooperated with the health department in this effort to teach parents the value of periodic health examinations for their children beginning as early as possible. If this method continues to be successful on the east side, it will be put into effect in other parts of the city.

Hospital and University Unite in Great Expansion Program.—New York Hospital and Cornell University have entered on an agreement whereby Cornell Medical College and New York Hospital will unite as a single institution to be known as the New York Hospital-Cornell Medical College Association, it was announced, October 30. A building to house the two institutions will be erected, immediately north of the Rockefeller Institute for Medical Research overlooking the East River. The hospital will undertake the construction of the main building in July, 1928, at an estimated cost of about $11,000,000. The new institution expects to be in a position to offer opportunities which will attract the ablest teachers, investigators and physicians. The faculty and staff will be organized on the university basis, with the important clinical and laboratory departments being manned by full-time teachers and investigators, and by others on part time. Toward carrying out this plan, the General Education Board has authorized an appropriation of $7,500,000. When the enterprise is completed, the combined financial position and requirements are estimated at a total of $60,650,000, of which $15,000,000 is considered as additional funds required. This, it is hoped, will be supplied by friends who see in this institution an opportunity to promote the welfare of mankind. A joint administrative board representing the university and the hospital will supervise the new institution. The director will be Dr. G. Canby Robinson, at present dean of Vanderbilt University School of Medicine, Nashville, Tenn., who in 1920 was chosen to organize and direct the new medical department of Vanderbilt University, a task which he has carried through to great success. Dr. Robinson will, for the present, continue to be associated with Vanderbilt University, while giving the time required to plan for the construction and organization of the new medical school in New York. His duties, it is announced, will be as follows: executive officer of the joint administration board of the association, and executive officer of the medical faculty, having general charge of the conduct of the medical school and absorbing the duties now attached to the dean. In the hospital he will represent the educational and research interests and through the superintendent and other officers will supervise provisions made for education and research; he will, with the aid of the faculty of the medical school, prepare the educational and scientific budget and supervise the administration of this budget; he will be charged with responsibility for coordinating the work of the school and the hospital so as to promote effective cooperation in teaching, research and the care of patients.

The New York Hospital is the second oldest institution of its kind in this country, having been chartered in 1771. More than 2,200,000 patients have been treated in its wards. Cornell University Medical College was established in 1898 by gifts of the late Col. Oliver H. Payne. The two institutions have had a limited affiliation since 1912. New York Hospital has been impressed with the importance of rendering a larger service to the sick, to medical education and to science, and has now established the most intimate possible connection with the university. The plan has been in the course of fruition for years. It was a dream of the late Payne Whitney who, the president of New York Hospital states, took part in hundreds of conferences, exhibiting through them all a clarity of understanding and singleness of aim. Mr. Whitney left large legacies in his will to both institutions.

NORTH CAROLINA

Society News.—Dr. Charles Banks McNairy, Lenoir, was elected president of the Ninth District Medical Society, September 29. Among other features of a successful meeting were clinics by Dr. Joseph A. Elliott, Jr., Charlotte, on skin diseases, and by Dr. Oscar L. Miller, Gastonia, on diseases of the spine. About 250 persons attended the dinner, at which Dr. McNairy presided.

Prize for Essay on Family Doctor.—A physician of North Carolina has provided funds for three prizes, totaling $500, to be awarded for the best essays on "How the Family Doctor Can Best Increase His Usefulness and His Income." The contest is open to physicians in North and South Carolina and Virginia, and awards will be decided by a committee from the three states. The essays should be mailed to *Southern Medicine and Surgery*, Charlotte, N. C., before December 1.

OHIO

Personal.—Dr. Clem D. McCoy, Kenton, was guest of honor at a banquet given by Hardin County physicians, September 29, prior to his departure for Texas, where he expects to make his home.——Dr. Solomon A. Hatfield has resigned as superintendent of the Starling-Loring Hospital, Columbus, it is reported.——Dr. Willis B. Merrill, Columbus, has tendered his resignation as attending physician to the Ohio State Penitentiary, effective November 8, to engage in private practice, and Dr. George Keil has been appointed his successor.——Dr. Elliott C. Cutler, Cleveland, head of the department of surgery, Western Reserve University School of Medicine, has been elected a member of the Royal Academy of Medicine of Rome, Italy.

Ohio Votes November 8.—The voters of the state of Ohio will decide, November 8, whether the chiropractors shall have a separate and independent state licensing board and the rights and privileges of physicians. The Cincinnati *Enquirer* advises its readers "to swat that bill"; indeed, almost every group in Ohio intelligently concerned with health matters is opposed to the chiropractic proposal. The committee on public policy of the Ohio State Medical Association issued a statement informing the people of the public health menace contained in the initiated chiropractic bill, considering it as much their duty to do so as it is the duty of legitimate business men to warn the public against blue sky speculation or fake auctions. Chiropractors deny the germ basis of disease; yet the proposed law would grant chiropractors the right to treat diseases that are known to be caused by germs. There are few states in this country that have so many institutions of learning as has the state of Ohio. There are few states where the general educational level of the voters is as high as in the state of Ohio. It is difficult, therefore, to believe that on next Tuesday the voters of Ohio will authorize chiropractors to assume the functions of physicians. The educational qualifications of chiropractors by no means compare with those of doctors of medicine.

OREGON

Dr. Brown Leaves Demonstration for Leland Stanford.—Dr. Walter H. Brown, director of the Marion County Child Health Demonstration, conducted under the auspices of the Commonwealth Fund of New York and the American Child Health Association, has resigned to become professor of hygiene and physical education at Leland Stanford, Palo Alto, Calif. Dr. Brown's successor will be Dr. William De Kleine, formerly health officer of Saginaw, Mich., and director of the child health demonstrations at Mansfield, Ohio, and Fargo, N. D. Dr. Brown formerly practiced in Pennsylvania; he was epidemiologist for the Massachusetts State Department of Health; health officer at Bridgeport, Conn., and associate director of health service for the American Red Cross. He then became affiliated with the commission for the prevention of tuberculosis in France under the Rockefeller Foundation, and on returning to the United States in 1921, became director of the child health demonstration at Mansfield, and from there he went to Marion County.

PENNSYLVANIA

Society News.—Dr. Irving W. Potter, Buffalo, will lecture, November 9, at the Concordia Club, Pittsburgh, 8:30 o'clock, under the auspices of the Medical Forum, on "The Technic of Elective Version," to which members of the Allegheny County Medical Society are invited.——Dr. Chevalier Jackson, Philadelphia, addressed the Lycoming County Medical Society, September 9, on "Prevention of Foreign Body and Lye Accidents."

Pittsburgh Press Honors Veteran Physicians.—Sixty-six physicians, each of whom has been in practice at least twenty-five years, attended a banquet at the William Penn Hotel, Pittsburgh, October 18, as guests of the Pittsburgh *Press*. The occasion was planned as an expression of Allegheny County's gratitute and appreciation to these faithful servants who, the *Press* notes, represent the highest tradition in ethics of the medical profession of the community, many of them being of that old school "which knew mud roads, long drives in carts and all-night vigils by the sick bed." There were no prepared addresses but there was "that happy spirit of

cameraderie found in a body of congenial men." Greetings of the *Press* were received by the veterans by a rising vote of thanks for planning and conducting the banquet and for the theater party later at which they witnessed a film entitled "The Country Doctor."

Philadelphia

Dr. Chevalier Jackson Honored.—The French government has conferred on Dr. Chevalier Jackson, head of the bronchoscopic clinic at Jefferson Hospital, the cross of a chevalier of the legion of honor. The award was made by Dr. J. M. Lemee of the American Hospital in Paris, acting on behalf of the French government at a dinner, October 23, at the Arts Club. It will be recalled that Dr. Jackson received the Philadelphia Award for 1926 for having performed the greatest service to humanity during the year of any citizen of the city (THE JOURNAL, Feb. 19, 1927).

Medals Awarded to Scientists.—The John Scott Medal and $1,000 was awarded by the Academy of Natural Science of Philadelphia, November 1, to each of the following: Dr. Afranio de Amaral, director of the Antivenin Institute of America for the preparation of antivenins; Dr. Alfred F. Hess, clinical professor of children's diseases, University and Bellevue Hospital Medical College, for a method of producing a vitamin factor in food by the use of ultraviolet rays; Dr. Francis Peyton Rous of the Rockefeller Institute for Medical Research, New York, for his work on tumor cells. Dr. Rous was prevented from accepting his prize in person, it is reported, on account of illness.

Hospital News.—The teaching hospital of the graduate school of medicine of the University of Pennsylvania at Nineteenth and Lombard streets opened for the reception of patients, October 23; the hospital includes the new building and the old adjacent buildings known heretofore as Polyclinic Hospital and Diagnostic Hospital; eighty physicians from this country and abroad were enrolled in the graduate school of the university when it opened.——The cornerstone of the new $1,000,000 buildings for the Philadelphia Home for Incurables at Belmont and Coshockton avenues was laid, October 20. During the fifty years of its existence the home has sheltered 6,000 incurables; there are now many on the waiting list.

Conference on Tuberculosis.—The Philadelphia Health Council and the department of public health are sponsoring a conference on tuberculosis, November 9, at the Philadelphia County Medical Society, Twenty-First and Spruce streets for a discussion of the question "What Changes, If Any, Should Be Made in the Tuberculosis Campaign in Philadelphia?" Among those who will attempt to answer the question will be Drs. Wilmer Krusen, Ward Brinton, William G. Turnbull, Haven Emerson, New York; Charles J. Hatfield of the Henry Phipps Institute; Elmer H. Funk, Lawrason Brown, Saranac Lake, N. Y.; Otto P. Geier, Cincinnati, and representatives of many organizations participating in the tuberculosis work.

TENNESSEE

Health at Nashville.—Telegraphic reports to the U. S. Department of Commerce from sixty-seven cities with a total population of about 30 million, for the week ending October 22, indicate that the highest mortality rate (19.3) was for Nashville, and that the mortality rate for the group of cities as a whole was 11.4. The mortality rate for Nashville for the corresponding week last year was 17.1, and for the group of cities, 11.3.

New Teachers at Vanderbilt.—It is reported that Dr. Waller S. Leathers, associate dean of Vanderbilt University School of Medicine, Nashville, announced, among others, the appointment of the following persons to the staff:

Dr. John B. Youmans, as assistant professor of medicine; Dr. Youmans formerly was on the faculty of the University of Michigan Medical School, Ann Arbor.

Dr. Alvin E. Keller, instructor in the department of preventive medicine; Dr. Keller was formerly in charge of the training station of the International Health Board, Andalusia, Ala.

Dr. Henry E. Meleney, associate professor of preventive medicine; Dr. Meleny was for several years at the Peking Union Medical College, China.

Dr. Herbert S. Wells, instructor in the department of pharmacology; Dr. Wells formerly was in the department of physiology of the Medical School of Harvard University, Boston.

Dr. Charles Eugene Woodruff, instructor in the department of pathology; Dr. Woodruff was an assistant in the department of pathology at Yale University School of Medicine, New Haven, Conn.

Among the assistants appointed are the following:

Dr. James B. Alloway, medicine.
Dr. Marion H. Huffman, medicine.
Dr. Wieland W. Rogers, pathology.
Dr. William C. Smith, medicine.

Tennessee to Award "Covering Diplomas."—At a meeting of the board of trustees of the University of Tennessee October 12, it was voted to authorize the presentation of "covering diplomas" to graduates of the medical schools which consolidated to form the University of Tennessee College of Medicine, namely, the University of Nashville Medical Department, the College of Physicians and Surgeons of Memphis, the Memphis Hospital Medical College, the Lincoln Memorial University Medical Department and the old University of Tennessee Medical Department. There are said to be about 4,000 practicing physicians who hold diplomas from these schools who will be entitled to a "covering diploma" signed by the authorities of the University of Tennessee and bearing the seal of the university, thus making the bearer eligible to the honor and privilege of the present day graduates of the University of Tennessee College of Medicine. Candidates are requested to apply to the administrative office of the University of Tennessee, Linsley Hall, 879 Madison Avenue, Memphis. It is planned to hold a reunion banquet, November 15, in Memphis, for the ceremony of presentation of these diplomas.

Southern Medical Association Meeting at Memphis.—The twenty-first annual meeting of the Southern Medical Association will be held at the auditorium, Memphis, November 14-17, with the Memphis and Shelby County Medical Society acting as host. It has been ten years since this association met in Memphis. The general sessions will be held in the concert hall of the auditorium, and the section meetings in the smaller halls and assembly rooms. Monday will be devoted to clinics, and in the evening the president, Dr. John Shelton Horsley, Richmond, Va., will give an address. Tuesday will be given over to clinics and the reading of papers. The orations on medicine and surgery and the election of officers will be Wednesday evening. The annual reception and ball will be Wednesday evening at the Hotel Peabody. There will be additional entertainment for the members' wives throughout the meeting, a luncheon at the Nineteenth Century Club and a golf tournament for ladies. The Association of Women Physicians of the South will hold their annual dinner prior to the president's reception, Wednesday evening. The fraternity dinners and alumni reunions will be Tuesday evening. There will be a golf tournament for the men at the Memphis Country Club and another at the Colonial Club and a trap-shooting tournament. The section meetings will cover all branches of the practice of medicine. The American boards of ophthalmology and otolaryngology will hold examinations in Memphis, Monday, November 14. Applications should be sent to the secretaries of the respective boards, Drs. William H. Wilder, 122 South Michigan Boulevard, Chicago, and Dr. William P. Wherry, 1500 Medical Arts Building, Omaha.

VERMONT

State Medical Election.—At the one hundred and fourteenth meeting of the state medical society at Middlebury, October 14, Dr. Stanton S. Eddy, Middlebury, was made president; Dr. Charles F. Dalton, Burlington, vice president; Dr. William G. Ricker, St. Johnsbury, secretary; Dr. David Marvin, Essex Junction, treasurer, and Drs. Thomas A. McCormack, St. Albans, Edward A. Tobin, North Bennington, Frank E. Farmer, St. Johnsbury, and Michael F. McGuire, Montpelier, councilors. The next annual meeting will be in Burlington.

County Society News.—The Addison County Medical Society met at the home of Dr. Charles H. Dean, Ferrisburg, September 8, where each member was called on to discuss cases which had been presented from Cabot's case histories before reading the discussion, and to defend his own diagnosis. The next meeting will be at the home of Dr. Frank C. Phelps, Vergennes, in November.——The Bennington County Medical Society held its annual outing at Lake Shaftsbury, in July. —— Dr. Ray E. Smith, Rutland, addressed the Windsor County Medical Society, August 29, on surgical obstetrics in general practice and Dr. William Warren Townsend, Burlington, on genito-urinary diseases. Dr. and Mrs. A. M. Cram, at whose cottage at Plymouth Lake the meeting was held, served lunch.

WEST VIRGINIA

Outbreak of Smallpox.—The Norton schools, near Elkins, were closed the first week in October owing to an outbreak of five cases of smallpox in the town. Four families were affected. Schools of Colton had previously been closed, and the Norton cases are thought to have developed from that center of infection.

Public Health Meeting.—The second annual meeting of the West Virginia Public Health Association will be held at Morgantown, November 21-23. The first day will be devoted to the consideration of a health program from the layman's point of view. A representative of the U. S. Public Health Service will make a report on the health survey made in West Virginia last spring in accordance with a resolution passed by this association. There will be round-table conferences and discussions by health workers from other states. The parent-teacher association will hold its meeting in Morgantown just previous to the public health meeting.

WISCONSIN

Auto Drivers Must Describe Themselves.—After January 1, every person in Wisconsin who operates an automobile must have a driver's license as required by a recent law. This applies, the *Wisconsin Medical Journal* states, not only to the one who owns the car, but to each individual of the family, son or daughter of the owner, and to every other person who drives on Wisconsin roads. A license will be granted to the owner without charge but all others must pay 25 cents. With each application must be filed a physical description of the applicant, including, for example, such details as age, weight, height, color of hair and eyes. About one and a half million people, it is estimated, will have to register under this law.

Personal.—Dr. J. R. Newman has joined the Schiek Clinic at Rhinelander. —— Dr. Elmer L. Sevringhaus has been transferred from associate professor of physiologic chemistry to associate professor of medicine and associate physician to the Wisconsin General Hospital, Madison, and Edgar J. Witzemann, Ph.D., formerly of the Mayo Clinic, has been appointed assistant professor of physiologic chemistry to succeed Dr. Sevringhaus.——Dr. Benjamin C. Brett, Green Bay, celebrated his ninety-fourth birthday, August 24, when a reception was given in his honor at the local Y. M. C. A. ——Dr. Arthur J. Somers, Chippewa Falls, won the president's trophy and gold medal in the annual golf tournament of the state medical society during the meeting at Eau Claire with a low gross score of 81, and Dr. William J. Frawley, Appleton, won the secretary's trophy and silver medal with a low net score of 66, his handicap being 18.

Society News.—Dr. Roger C. Cantwell, Shawano, addressed the Green Bay Academy of Medicine, October 12, at the Bellin Memorial Hospital on gastric and duodenal ulcers; the paper was formally discussed by Drs. William H. Bartran and Otis W. Saunders, Green Bay.——Dr. Ralph M. Carter addressed the academy, September 15, on "Estimation of Permanent Functional Disability Following Fractures."——Dr. I. Snapper, professor of pharmacology and general pathology, University of Amsterdam, addressed the University of Wisconsin Medical School, November 1, on "Nonexcretory Functions of the Kidney."——Dr. Walter A. Fansler, University of Minnesota Medical School, Minneapolis, addressed the Barron-Polk-Washburn-Sawyer-Burnett County Medical Society, Frederic, September 7, on "Helpful Points in Rectal Examinations"; Charles H. Jamieson, D.D.S., on "Relation Between Modern Medicine and Modern Dentistry"; Dr. James A. Watson, Minneapolis, on "Infection of the Ear and Paranasal Sinuses," and Dr. Seth R. Medley, Siren, on "Rheumatic Fever."—— The Dane County Medical Society discussed the prevention and cure of tuberculosis at its September 6 meeting at the Morningside Sanatorium, the speakers being Drs. Louis R. Head, Madison, and Oscar Lotz, Milwaukee.——The house of delegates of the State Medical Society of Wisconsin authorized the establishment of a foundation in order that those who care to may leave by gift or bequest to the fund money that will be used for the advancement of the medical profession; the house nominated the president, the speaker of the house of delegates and the secretary of the society as a committee to work out the details for the actual accomplishment of this undertaking at the meeting of the council in January.

GENERAL

Additional Fellows in Medicine.—The secretary of the Medical Fellowship Board of the National Research Council, Washington, D. C., writes that through an oversight the following names were omitted from the list of fellows appointed by the board at its last meeting, September 24: Dr. Arthur R. Colwell, Dr. Louis H. Jorstad, Dr. Harold G. Wolff and Ethel D. Simpson.

Automobile Accidents Still Increase.—For the four weeks ending October 8, automobile accidents were responsible for the death of 662 persons in seventy-seven cities in the United States, while for the corresponding four weeks of last year they were responsible for 650 deaths. For the fifty-two weeks ending October 8, the total number of deaths in these seventy-seven cities from automobile accidents was 6,973, while for the fifty-two weeks ending Oct. 9, 1926, the total was 6,585, an increase of 4 per cent in the rate per hundred thousand of population in a single year. Five cities reported no automobile deaths for the four weeks ending October 8, while in the corresponding period last year seven cities reported no deaths.

Seventy-Seven Disasters in One Year.—The American Red Cross, in making public its annual report, states that during the fiscal year ending June 30 relief was provided in seventy-seven major disasters in the United States. Flood conditions kept the organization almost continuously busy. From September to December, 1926, it was engaged in Florida following the hurricane; then came the Mississippi flood, affecting seven states and necessitating the rescuing, sheltering, feeding, and clothing of more than 600,000 persons. For these two disasters, the people of this and other countries provided the Red Cross with more than $20,000,000, the raising of which by popular appeals was accomplished, it is said, without the addition of a single worker, excepting the volunteers assembled by local chapters throughout the country. From April to June, while still engaged in the Mississippi Valley flood relief work, the Red Cross was providing relief in twenty-one other disasters, eleven of which were caused by tornadoes. At one period of the year covered by the report, relief operations were being carried on simultaneously in fourteen other different disaster situations. The Red Cross will soon make its annual appeal. The goal this year is 5,000,000 members.

Evidence That Cows Synthesize Vitamin B.—In an investigation extending over four years at Pennsylvania State College, evidence has been found that cattle will grow normally to maturity on food that has insufficient vitamin B to support general well being in rats. Cows were fed the experimental ration continuously for more than two years, and their milk was found to be as potent in vitamin B as that from cows receiving good winter rations. The investigation clearly indicates, the authors say, that cattle have no requirement for vitamin B in the ration because of the bacterial synthesis of vitamin B in their rumen. There was a fistula in the side of one of the experimental cows whereby portions of the fermented deficient ration could be removed. Alcoholic extracts of this material, when used in the usual routine feeding test with young rats, gave positive evidence of the presence of vitamin B. The bacterial flora in the rumen of this experimental animal showed the predominance of the bacillus of the genus *Flavobacterium* (Bergey) to the extent of about 90 per cent. The investigation was conducted by Samuel I. Bechdel, Ph.D., Hannah E. Honeywell, Ph.D., Raymond A. Dutcher, A.M., and Martin H. Knutsen, M.S., of the departments of dairy husbandry and agricultural and biologic chemistry, who will publish their results in a technical journal at an early date.

Opening for Professor of Chemistry.—The U. S. Civil Service Commission announces that the position of professor of chemistry at the hygienic laboratory, Public Health Service, Washington, D. C., is vacant and that, in view of the importance of the position, an unusual method will be followed to insure the appointment of a thoroughly qualified man. Instead of the usual civil service examination, the candidates will be passed on by a special board comprising the director of the hygienic laboratory, Dr. George W. McCoy; Charles L. Parsons, Sc.D., chemical engineer; Julius Stieglitz, Ph.D., University of Chicago; Charles H. Herty, Ph.D., New York; Dr. Reid Hunt of Harvard University Medical School, and A. S. Ernest, examiner of the civil service commission, who will act as chairman. The examination will consist solely of the consideration of the qualifications by this board, the minimum for consideration being a Ph.D. or Sc.D., and at least five years of subsequent experience, most of which must have been devoted to important chemical research. Applicants must have a reading knowledge of French and German and submit a complete list of their publications. The duties of the position will consist of supervising research in chemistry as it relates to public health. The incumbent will be chief of the division of chemistry and be responsible for the administration, personnel and scientific work of that division. The salary is $6,000 and promotion may be made without change in assignment up to $7,000. Qualified persons who desire to apply should write for Form 2600 to the U. S. Civil Service Commission, Washington, D. C., which must be returned not later than November 29.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 16, 1927.

Fish as Carriers of Disease

In his report for 1926 on the Lancashire Sea Fisheries Laboratory at the University of Liverpool, Prof. James Johnstone refers to the decline in typhoid since 1869 and points out that there is still a large trade in mussels and cockles, and expresses doubt whether its cessation would have any observable effect on typhoid statistics. He declares that in the past the ascription of a case to shell-fish was merely a guess. After mentioning the amount of research that has been done in this line, he says: "At present an enormous amount of purely academic research is being done on matters of public interest—this one and the causation and nature of cancerous diseases, for instance—and the regrettable thing is that it does not appear to be any one's business to think about all this and endeavor to see what it means and how it may be applied. The fact is that there is an enormous waste of scientific research at the present time." Giving examples of diseases found in fish, the report mentions the case of a small halibut surrendered by a Birkenhead fishmonger after a food inspector had noticed in it traces of tuberculosis, like those found in cattle. All the internal organs were tuberculous, and the effect was the same as in the organs of cattle. In the roes, fibrosis had gone so far that no sign of the original ovarian structure remained. In a large turbot there were about a dozen tumors of the type "which in man are the most malignant of all and the most rapidly fatal." Professor Johnstone adds: "It is, of course, impossible to assert that such fish-flesh would be dangerous to any one eating it, but its use as human food is strongly repellent, and we know as yet so little of the cause of cancerous disease that such affected fishes should certainly be destroyed as a general principle. This precise fish had not been surrendered or condemned, and was exposed for sale, and had actually to be bought as a specimen."

The Troubles of Medical Socialism

In a previous letter the evil of too much drugging under the national health insurance act was described. This colossal waste was traced to the socialistic character of the act, which provides for expenditure without any effective interest in economy. The new evil introduced by the attempt at remedy was also pointed out. A similar situation has arisen in another direction. Complaint is made that physicians are too complaisant in giving certificates of incapacity for work and that insured persons out of work though not incapacitated obtain medical benefit. This was particularly noticed during the coal strike. The physicians avoid refusing certificates which would lead to unpopularity and transference of the insured from their lists to those of more complaisant colleagues. An insured person could transfer at any time to another physician in the same district, subject only to his acceptance by the latter. A new regulation has been made, and in order to transfer he must have either the consent of both physicians or give a fortnight's notice of his intention to the insurance committee. This attempt to safeguard the physician's independence seems rather feeble, for the giving of a fortnight's notice by the insured persons is not much trouble. But it also has its drawbacks and failed to satisfy some of the profession. The secretary of the Medical Practitioner's Union (a trade union formed by panel physicians) describes the new regulation as unfair to the young physician who has started a practice without a panel. He did not think that many of the insured could compose an intelligent letter to the insurance committee for the purpose of making a change. Moreover, it would be hard on a sick person to have to continue for a fortnight under a physician in whom he had lost confidence.

Periodic Examinations and Insurance Against Illness

The success claimed by the Metropolitan Insurance Company of New York from periodic free medical examination of its policyholders has led to imitation in this country. A scheme whereby the family physician should be paid to keep his patients well is also being put forward by a group of physicians. It is claimed that nearly 50 per cent of serious illness and disease could be prevented by medical treatment in the earliest stage of sickness. The practice in most cases is for people to wait till they are very ill before consulting a physician. It is suggested that a man—or a woman, or a family—should be able to contract for a periodic medical overhauling at a small fee, and that he should be able to insure against physician's bills and costly operations. It is also suggested that the great insurance companies or some other organization in this country might arrange for regular medical examination facilities for families. The two schemes are an extension of sickness insurance to the middle and professional classes, on whom, as Lord Dawson of Penn (physician to the London Hospital) has declared, "the cost of preserving good health is becoming increasingly burdensome. The more medical knowledge increases, the larger the responsibility which falls on the head of the family. I have known of families crippled for ten years by the heavy cost of modern methods of treating disease." The suggestion that the Chinese practice of paying the physician when people are well and ceasing to pay him when they are ill has occasionally been put forward in this country, and some approximation to this is now contained in an insurance scheme, promoted by "Family Medical Services, Limited," which is in no way a money-making body. The "Anchor" insurance policy, as it is called, is issued by "Lloyd's," whose underwriters are not allowed to advertise. The premium works out at from 7 to 36 cents a week for each member. The prospectus is divided into two parts, one covering general practitioners' fees and the other insuring cost of operations, nursing charges and other expenses. Thus it is possible for a family of four people to be insured for all physicians' fees over $15 and up to $250 per person for operations, for an annual premium of $21. Deductions are allowed as the family grows bigger. For a married couple the same benefits could be secured by a yearly payment of $11.

The Family Unit in the Treatment of Tuberculosis

Eleven years' experience at the Papworth Village Settlement for tuberculosis (described in previous letters) has shown that the children of tuberculous parents, instead of suffering from segregation there, are actually benefited. No child has contracted tuberculosis at the settlement. This supports the original contention of the director, Dr. Varrier Jones, that the family and not simply the tuberculous person should be the unit for treatment. At the end of 1926 the settlement had a total of 127 children, of whom ninety-one were between the ages of 3 and 12. Some had undoubtedly "met the tubercle bacillus," and one had had a period at a sanatorium before his arrival with his family at Papworth, but there was no other case of tuberculosis among the children. These facts are the answer to those critics who believed that, among so many diseased persons, a large proportion of the children would become diseased—"the babies with meningitis, the others as they grew up." Dr. Jones writes: "After eleven years' experience, no child (and some have now come of age) has, while a member of our community, contracted tuberculosis of the lungs, glands, bone or joints, or indeed in any known clinical form. We have had

no single case of tuberculous meningitis. Those who have left the settlement to seek education or employment elsewhere are all free from the disease." He believes, therefore, that this system has cut the vicious circle of infection, rendering the family not only free from infection but also highly resistant to the disease. The idea of the village settlement for the tuberculous has taken us a long way along the road of prevention. It is a point which is not sufficiently grasped by those who treat the patient as the unit. It cannot be too strongly emphasized that the family is the unit and, while we prolong the life of the bread winner under hygienic and economically sound conditions, the family becomes highly resistant to the disease." The spirit of cooperation to be found in the village and workshops is highly spoken of by the medical director.

Cancer Among Jews

At the annual meeting of the Jewish Health Organization of Great Britain, Dr. W. M. Feldman gave an account of the investigations into the incidence of cancer among Jews that had been carried out by Dr. M. Sourasky. He had examined the mortality figures of persons of the "cancer age," i. e., between 40 and 65 years, and on the whole the incidence among Jews was proportionately equal to that among non-Jews. In considering the distribution of cancer among the various systems of the body, cancer of the digestive system was found to be more prevalent among Jews than among non-Jews, whereas cancer of the reproductive system, and especially of the uterus, was slight. Among so-called poor and rich Jews, he had found cancer of the digestive system more prevalent, and cancer of other parts of the body less prevalent among the poor.

The Labor Party Will not Support Birth Control

For four years the women of the labor party have endeavored to further birth control by demanding that the ministry of health shall provide information on the subject. But the executive of the party will not follow this lead. Last year it deflected discussion on the motion by recommending that "birth control is a subject on which members of the party should be entitled to hold and promote individual opinions." This year an organization known as the Workers' Birth Control Group has attacked the executive for "flaunting" the decisions of three successive conferences of labor women. At the annual conference, however, the party again refused to commit itself to the policy of promoting birth control on the ground that to do so would split the party, which contains an element strongly antagonistic to the procedure.

Australia's Flying Squad of Physicians

In the large portion of Australia which is thinly populated, the want of prompt medical aid in emergencies has proved a great drawback. Aviation promises to remedy this. A flying squad of six physicians is to be formed by cooperation between the Australian branch of the British Medical Association and the federal and state governments. It will thus be possible to give immediate medical attention in remote bush country. Wireless will also play an important part, for the six hospitals to be equipped with a flying physician will also have a wireless receiving apparatus. Stockmen in isolated areas hundreds of miles from the nearest physician will now receive early medical aid. The federal government will provide a subsidy for the upkeep of the airplanes. Each of the physicians stationed at the hospitals so equipped will have a radius of about 400 miles, and it is hoped that in the future every corner of Australia will be covered. Petrol supplies will be laid down in the various areas covered. Patients in a critical condition will be brought by airplane to the nearest hospital. The existing commercial air services will probably be used at the outset.

PARIS

(From Our Regular Correspondent)

Oct. 12, 1927.

The October Congresses

The series of important medical congresses is being continued and will last until the end of the present month: the Congress of Surgery, the Congress of Internal Medicine, the Tuberculosis Congress (in celebration of the centenary of the birth of Villemin), and the Congress of Hygiene. The Congress of Internal Medicine alone has a registration of 1,200. During this period, a Congress of Hydrology has brought together at Lyons the spa physicians of France, including a large number of physicians from Belgium, Czechoslovakia, Italy, Mexico, Portugal, Spain, Roumania and Switzerland. The Congress of Surgery covered a greater breadth of subjects, and the papers were followed by animated and exhaustive discussions. The topics were judiciously chosen and dealt with problems on which there is much difference of opinion among surgeons, at the present time. M. Lardennois presented a study on chronic pericolitis and intestinal adhesions. M. Jacques Silhol dealt with chronic epiploitis, to the genesis of which he has devoted long study. He has little confidence in medical treatment such as thermal "cures" or diathermy. Liberation of the epiploon, its partial resection, or the use of grafts appears preferable. He gave a detailed discussion of various incisions but expressed himself in favor of the wide lateral incision recommended by Walther. The question of Mikulicz' drainage after abdominal interventions raised discussion, which was a continuation of the discussion that arose last year before the Société de chirurgie. The general paper on the subject, prepared by MM. Cadenat and Patel, was selective in tone. The third topic considered arterial sympathectomy applied to the surgery of the limbs. Professor Leriche introduced the problem and contended that it is a useful measure, although admitting that it has been too generally applied, which explains failures in cases in which it was not indicated. Dr. Robineau opposes the measure and regards it as merely a physiologic curiosity, alleging that the results of the intervention, even though they may be good, are never lasting. Numerous individual communications were presented. Dr. Calot of Berck demonstrated, with the aid of roentgenograms, the correctness of his contention that osteochondritis, coxa plana, senile coxitis and the like are only congenital luxations of the hip, long falsely diagnosed, and perfectly curable by his method of bone grafts and immobilization in a plaster cast. The new officers elected for the coming year are Professor Gosset of Paris, president, and Professor Tixier of Lyons, vice president. The three main topics on the program will be: (1) the present status of spinal anesthesia, to be discussed by MM. Forgue of Montpellier and Toupet of Paris; (2) remote results of surgical treatment of duodenal ulcer, to be presented by MM. Okinczyc of Paris and Delore of Lyons, and (3) remote results of trephining operations on the skull in traumatic lesions, to be considered by MM. Maisonnet of the army medical corps and Petit-Dutaillis of Paris.

The Sensorial Hallucinations of Persons Who Have Undergone Amputations of Limbs

An article on sensations occurring in amputation stumps but which the bearers localize in the amputated member has been published by a physician who has undergone an amputation. The article is by Dr. Loblígeois, roentgenologist of the hospitals of Paris, who, suffering from grave, necrosing radiodermatitis, was compelled, after several partial amputations, to submit to the total disarticulation of the right arm. He labors under the constant delusion that he still has his arm, that he folds it across his chest, allowing the fingers to glide into a vest pocket, in accordance with a gesture that

has been habitual for many years. If, when jostled on the street in a crowd, he is forced to bend toward the right, he experiences the very frank sensation that a reflex causes him to seek to extend his absent right arm to discover some support. Sometimes he is deceived into attempting to grasp an object with his right hand; he may even experience the sensation of holding the object between his thumb and first finger, and it is only through the control exercised by vision that he perceives his error. Finally, as other maimed persons have previously reported, he feels pain, which develops evidently in his stump but which he localizes nevertheless in a very precise manner in his thumb, in a certain finger, in the wrist, or in the elbow, just as if they were still intact. Sometimes the pains are very severe, as if caused by pinching or by a burn; then, again, he may have the sensation of a trickling, ice-cold liquid.

The explanation proposed by Dr. Lobligeois for these facts is that each nerve trunk resembles a cable comprising a large number of telephone wires, each of which has its own peculiar destination, and transmits to the center sensations that are always interpreted by that center as being of the usual origin, just as would happen in a central telephone exchange, where the light of the subscriber would flash if, in a cable broken by some accident, a current should be passed through the wire corresponding to such subscriber. The contractions of the fibrous scar tissue and its elasticity, which varies with the amount of moisture in the atmosphere, would serve as exciting causes.

A Physicians' Strike Without Hardship to the Indigent

Following a refusal of the general council to accept their request for an increase in the fee schedule, the medical syndicates of a portion of the department of the Ain have decided to cease to participate in the medical aid service for the poor and the aged. The present fees are 6 francs (about 24 cents) for an office consultation and 8 francs (32 cents) for a house visit, with an allowance of 1.50 francs per kilometer for calls outside the commune. The physicians state that they cannot accept a tariff schedule imposed by an arbitrary decision of the council, and insist that the matter of a tariff schedule must be determined by common agreement. They emphasize further that they are not the bond slaves of the council. They are, however, continuing to give free service to persons who are actually indigent, and are giving emergency aid to all. But they demand being paid directly by the patient and not by the administration. As the conflict has not been settled, the prefect has authorized the mayors of the communes to accept, for the time being, this solution until the council can investigate the matter and render a decision.

Espionage as Practiced by Internal Revenue Agents

The medical syndicates are much aroused by the revelation that has just been made by a somewhat outspoken provincial journal in regard to the secret instructions sent by the director of the internal revenue service to his agents in a department of western France. The director complains of difficulty in controlling reports of physicians in regard to the annual income from their practice. Examination of their books and records gives no definite information, for the courts have decided that by reason of the right of privileged communication they cannot be compelled to reveal the names of their patients. The director of the internal revenue service therefore suggested to the agents to mingle with the patients in physicians' waiting rooms; to interrogate them in regard to the fees they were paying, and then to retire on the pretext that an engagement prevented them from waiting their turn. Following such secret visits of the agents, physicians would be taxed whatever amount the director of the internal revenue service deemed legitimate, on the basis of the report turned in by the agent, and then, according to the law, the burden of proof was on the physician to prove the unjustness of the charge. The medical syndicates are raising a loud protest against such methods. They have advanced that, aside from a few eminent physicians in large cities, almost all French physicians are today in poor financial circumstances, and set forth that a waiting room, crowded with people, is a deceptive criterion for the appreciation of the value of a physician's practice. In the first place, not all those present are patients. There are frequently representatives of manufacturers and insurance companies, and there are many persons who are relatives, friends or business associates. None of these pay fees.

Dedication of the Foyer Médical Parisien

The Foyer médical parisien, located at 10 Avenue d'Iéna, in the old palace of Prince Roland Bonaparte, was dedicated, September 29. The Foyer médical is the seat of the Association professionnelle internationale des médecins, which was founded in Paris, July 17, 1926. Twenty-two countries are now represented. The delegates are all presidents or general secretaries of professional associations or of syndicates in their several countries. The association has relations with the International Bureau of Labor of the League of Nations, at Geneva, as a result of the interest in protection of the medical profession against the encroachments of social insurance.

BELGIUM

(From Our Regular Correspondent)

Oct. 8, 1927.

Third Congress of the International Society of Urology

The third congress of the International Society of Urology has been held in Brussels.

THE COMPARATIVE VALUE OF VARIOUS BLOOD AND URINE TESTS IN URINARY SURGERY

Chabanier of Paris, Kojen of Belgrade, and Quimby of Boston were in general agreement that, in spite of the improved methods of renal tests, there is still great uncertainty as to the operative prognosis. They admitted that (1) there is a limit to the precision of urinary tests, and (2) urinary tests are valid only for the moment when they are taken. Certain urinary tests are especially inexact. That is the case with phenolsulphonphthalein. Methods based on the study of the urea may produce more precise results. Nevertheless, the precision is only apparent and not real unless the technic followed in carrying out the test is itself rigorous.

TREATMENT OF TUBERCULOSIS OF THE REPRODUCTIVE ORGANS

Papers were presented on the treatment of tuberculosis of the reproductive organs by James Dellinger Barney, Boston; Carlo Camberini, Bologna; Pietro Marogna, Sassari, and Kenneth W. Walker, London. The authors voiced the conclusion that in the present state of our knowledge the treatment of tuberculosis of the reproductive organs cannot be based on pathogenic theories in regard to primary localization or diffusion, or on statistics of recovery. The cases must be studied separately. The course to pursue varies with the age and the constitution of the patient, the virulence of the infection, the character of the evolution, and the social conditions. Tuberculosis of the reproductive organs is not merely a local condition but affects the whole organism, and consequently the most logical treatment will be both local and general. Of the various procedures, conservative methods should first be considered.

Epididymectomy is the operation that should be employed in most cases. In spite of the fact that the operation for the total removal of the seminal apparatus is based on a correct comprehension of the pathology of the disease, it is a measure to be adopted only in certain cases; namely, in the cases in which retrogression of the central lesions did not follow epididymectomy.

TREATMENT OF TUMORS OF THE BLADDER BY PHYSICAL AGENTS

Beer of New York, Frysman of Warsaw, and Heitz-Boyer of Paris discussed the treatment of benign papillomas by high frequency currents with the aid of the cystoscope (uniterminal and biterminal currents); the treatment of benign papillomas without the cystoscope; the use of radium with the aid of the cystoscope or after cystostomy, and the use of ultrapenetrative rays. For the treatment of benign tumors the method of choice is electrocoagulation. The treatment of malignant tumors is passing through a period of indecision and uncertainty, for, whatever physical agent is employed, whether high frequency, roentgenotherapy or radium therapy, the results are far from brilliant.

Postencephalitic Psychoses

In a paper presented to the Société belge de neurologie, Dr. Hoven stated that, in the adult, encephalitis may give rise to various mental disorders, some of which appear at the time the encephalitis develops, while others are remote disorders that do not appear until one or two years after the onset of the encephalitis; the latter cases are rare and often atypical. He referred to a number of psychoses similar to those occurring in dementia praecox and in mania. These mental disorders may be truly postencephalitic, or may be rather the expression of an hereditary predisposition, called forth by epidemic encephalitis.

The Hospital Ship on the Congo

The establishment of a hospital ship on the Congo has been mentioned previously. The government has given orders for the construction of a barge to serve as a complement to the ship. The barge will be 50 meters long, 11 meters broad, and 3.6 meters deep. It will be provided with modern sanitary equipment, such as disinfection ovens and cold storage rooms. This floating annex will have a sufficient number of staterooms to accommodate twenty-five white passengers and forty natives; also quarters for physicians, nurses, and other personnel.

The New Rector of the University of Liége

Dr. Duesberg, professor of anatomy at the Faculté de médecine of Liége, who, during the war, served in the Johns Hopkins Hospital at Baltimore, has been appointed rector of the University of Liége for the period 1927-1930.

Tuberculosis on the Congo

Dr. Rodhain of the Université Coloniale de Bruxelles stated in a communication to the International Congress of Public Hygiene that tuberculosis in the Belgian Congo is being controlled in a satisfactory manner. Since 1923, tuberculous subjects have been ferreted out with considerable care. The number of cases of tuberculosis diagnosed in 1925 was 457 (from 1915 to 1922, the number increased from 100 to 209). The spread of tuberculosis has been the subject of new researches in Leopoldville and Stanleyville. The skin tests performed on pupils from 6 to 18 years old, in Boma, Leopoldville and Stanleyville, the three main urban centers, have yielded about the same proportion of positive results that are found among children living in the populous European cities. The natives living more removed from centers of European population continue to remain relatively immune to the infection.

Alcoholism in the Colonies

Dr. Ley addressed to the International Congress of Public Hygiene an ardent plea, supported by abundant statistics, that the temperance movement in the colonies, where alcoholic excesses are more dangerous than in the temperate zones, be intensified. Prohibition of all intoxicating alcoholic beverages, and especially of all so-called spirituous liquors, not excepting "trade spirits," should be applied not only to the natives but also to the colonists.

Medical Consultations at Sea by Wireless

Mention has been made of the resolution passed at the International Congress of Hygiene with regard to medical consultations at sea by wireless. M. Fraiture has recently brought the subject to the attention of the Belgian senate. The minister of railways and of the navy has also expressed his approval of the principle involved in the organization of such consultations and has favored the collection of further experience in the matter by the Belgian steamers. Furthermore, the minister has decided to appoint a commission to study into the problem, and to determine the feasibility of organizing such a service in Belgium for the benefit of all nationalities. Baron de Gerlache, of Gomery, inspector general of the navy, will head the commission. In addition, a delegate will be appointed by the minister of the interior (the hygienic service) with the view of adopting the radiotelegraphic method of consultation for the sanitary protection of the country, and notably for the application of measures approved by the international sanitary convention.

Antidiphtheria Vaccination with Anatoxin

Martin, Loiseau and Lafailie have communicated the results of 7,000 antidiphtheria vaccinations with anatoxin, which establish the efficacy of this mode of vaccination not only to protect healthy groups against diphtheria but also to check epidemics that have broken out in school circles. The authors emphasize the need of administering three injections two weeks apart in order to secure certain and durable immunity (from 97 to 100 per cent of immune subjects). The duration of the active immunity conferred by anatoxin was found to persist after two years in subjects who had received at least two injections of anatoxin.

The Cure and the Prophylaxis of Syphilis

A commission has been appointed by the Société belge de syphiligraphie to report on the following questions: 1. Is a genuine and complete cure of syphilis possible by abortive treatment? If so, in what cases and under what conditions? 2. Is it necessary from the prophylactic standpoint to subject to antisyphilitic treatment a woman pregnant by a husband who has never been ill, if the woman formerly had syphilis but was subjected to an abortive treatment of the disease, a treatment that satisfied the most rigorous demands from that point of view? 3. Is it necessary from the standpoint of prophylaxis to submit to antisyphilitic treatment a woman pregnant by a syphilitic husband if she herself has never manifested clinical or serologic symptoms of syphilis? The commission consists of Drs. Halkin, Bernard and De Graeve.

Work in the Treatment of Mental Disease

Dr. Verstraeten of the Institut de Melle demonstrated recently the value of work in the treatment of mental disease. Mental patients work along with the natives of the place. The choice of work depends on the aptitudes of the patient. Visitors at the institute admired some of the laces made by mental patients, for they were equal to the work of the most skilful lacemakers of that region. The patients went through a rhythmic gymnastic drill for the benefit of the visitors, who were impressed with the educational value of the method.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 31, 1927.

Treatment of Bone Tuberculosis

In previous letters reference has been made to the operation suggested by Dr. Robertson Lavalle—recently appointed professor of pathologic surgery in the Buenos Aires medical school—for the treatment of tuberculosis of the bones. The operation consists in trephining obliquely from the shaft to the end of the bone. Through the opening a bone nail is inserted as a sort of graft. The subject was recently discussed at length before the Buenos Aires Surgical Society. Ruiz Moreno, Rivarola, Del Valle and Tamini cited failures. Robertson Lavalle replied that his method is not dangerous; he has had only four cases of meningitis among 400 patients operated on. Trephining must reach the tuberculous focus. A "circulatory strangulation" exists there; thence the black appearance of the blood discharged. One must, however, aim at having the penetration end at the congestive area and not the purulent focus itself. Healing, according to Robertson Lavalle, is quick, in a few weeks with no immobilization or violet rays. Failures are due to technical shortcomings or letting the bone graft reach the purulent focus. In the discussion, unfavorable results were mentioned by a number of surgeons. Ruiz Moreno has seen aggravation in five out of eight cases so treated and has heard of deaths from meningitis. Copello described five cases without recovery or any satisfactory result. Rodríguez Egaño of the Mar del Plata Sea Sanatorium noted in six cases good results, in seventeen bad results and three were lost from sight. Three of the patients were operated on by the originator of the method.

Meeting of Pathologic Society

The third meeting of the Northern Argentine Society of Regional Pathology was held at Tucumán, July 7-10, under the presidency of Dr. S. Mazza. All the subjects were connected with subtropical pathology. A number of both foreign and national scientists read papers, among them Nicolle and Burnet on unsuccessful attempts to inoculate syphilis in the camel; Sergent and associates, artificial immunity; Castellani, elective fermentation of sugars by yeasts; Escomel, American leishmaniasis; Gaminara, *Trypanosoma cruzi* in Uruguay; Hormaeche, *Isospora hominis;* Vogelsang, *Sparganum;* Lahille, ticks.

According to a paper by Mazza, North Argentine natives have neither agglutinin A nor B.

New Medical Buildings

The Buenos Aires medical school has decided to begin the construction of several clinical laboratories on the two blocks next to the Clinical Hospital. The first buildings to be erected are the clinical medicine institute and the dental school.

The Rosario medical school has asked congress for an appropriation of 2,000,000 pesos (about $880,000) for new medical buildings.

The Buenos Aires municipal authorities opened recently the new buildings of the Pasteur Institute.

Honors to Physicians

The Argentine government has ordered that the Open Door Insane Colony shall be named after Prof. D. Cabred, who was its founder thirty years ago. The National Academy of Medicine is arranging for the occasion a tribute to Dr. Cabred.

The chair of infectious diseases, with its associated services in the Buenos Aires medical school, will hereafter be called José Penna Institute in honor of its founder. *La Semana Médica* has also unveiled in its editorial rooms a marble bust of Penna.

Prof. R. Castex has been appointed an honorary member of the Berlin medical society. His diploma was delivered to him by Professor Umber.

Prof. J. Arce has been granted a gold medal by the Hamburg medical school.

Foreign Lecturers

This year quite a large number of foreign professors came to give lectures in Argentine colleges. Among them were: from the United States, Dr. Schlutz, the Minnesota pediatrician; from France, Couvelaire, the obstetrician, and Ombredanne, the surgeon; from Germany and Austria, Umber, the nutrition expert, Fülleborn, the parasitologist, Fuchs, the ophthalmologist, and Latzko, the gynecologist, and from Italy, de Sanctis, the psychiatrist, Lustig, the pathologist, and Herlitzka, the physiologist.

The Spanish tuberculosis specialist Prof. L. Sayé has just arrived to lecture in his field at Córdoba.

Personal

Dr. A. Zubizarreta has resigned his position as director of the Buenos Aires Public Assistance, and Dr. J. B. Emina, former chief of the Pirovano Hospital, has been appointed to replace him.——Professor Nicolai, professor of physiology in the Córdoba medical school, has been dismissed because of his having abandoned his position. This action has caused a great deal of acrimonious discussion.——General J. Garine, the surgeon general of the army, has returned after attending the congress of military medicine at Warsaw.

BERLIN

(From Our Regular Correspondent)

Oct. 8, 1927.

The Convention of German Physicians

The German *Aerztetag*, or convention of German physicians, and the assembly of the Leipziger Verband, or Leipzig League, were held this year, as usual, during the middle of September. For the first time, the business manager of the German league of *krankenkassen* (health insurance organizations) was invited to attend the meeting. He expressed the hope that peace between the physicians and the *krankenkassen* might be reestablished. The first paper at the *Aerztetag* was presented by Professor Eichelberg, and dealt with the bad financial situation of the young, oncoming German physicians. Eichelberg ascribed the present situation to several different causes: social legislation; economic conditions brought about by the war and by inflation of the currency, which caused members of the liberal professions to lose property; low physicians' fees, and, finally, legal restriction of the number of physicians admitted to panel practice (attendance on members of the *krankenkassen*). He gave also a number of suggestions as to how he thought the financial straits of the youngest members of the profession might be remedied: (1) introduction of old age insurance for physicians, to which all desiring it would be entitled, in order that the older physicians might retire sooner, which would have the additional advantage of opening up places for the younger men; (2) abolition of the provisions pertaining to the limitation of assistantships to two years; (3) the systematic distribution of physicians, based on the prevailing conditions in the cities and in the rural districts; (4) limitation of the number of medical students, particularly through making the examinations more difficult, and (5) abolition of the restrictions on the number of physicians to be admitted to the panel in a given district.

The *Aerztetag* adopted only one resolution, which follows: "The *Deutscher Aerztetag* (convention of German physicians) demands, for the relief of economic distress among the

oncoming generations of physicians, the abolition of the restrictions pertaining to the admission of physicians to panel practice in a given district. In its place, a system of distribution should be introduced that will take careful account of the conditions prevailing in the cities and in the rural districts." The second topic, on which two papers were presented, was concerned with the problems of the development and the further extension of the system of welfare physicians. Since the social hygienist Professor Gottstein divided the physicians into *fürsorgeärzte* and *heilärzte* (welfare physicians and practicing physicians), the possibilities of friction between the two classes have continued to increase. The practicing physicians, especially, raise objections to the mixing of welfare activities with medical practice. On the basis of the papers presented, the *Aerztetag* demanded in its resolution that physicians everywhere should take an interest in welfare problems and should aid, to the best of their ability, in the advancement of the existing welfare arrangements, and offer every encouragement to welfare physicians. On the other hand, the *Aerztetag* demanded of the welfare physicians that they consider (also in times of conflict) the leading facts brought out by the speakers and keep in mind the endeavors that are being made to preserve the freedom of the medical profession. A further resolution demands the whole-hearted support of games, sports, gymnastics and hiking, since the *Aerztetag* believes that the central government is furthering its own interests when it makes appropriations in the support of such endeavors.

The third topic dealt with the proposed modifications in federal insurance legislation. In its resolution the *Aerztetag* demands that physicians be taken out of the industrial class, and proposes the creation of a federal medical syndicate and a federal chamber of physicians, which shall be on an equal footing with the insurance organizations and which shall organize and administer the entire medical service in so far as it is connected with social insurance. However, until such goal can be reached, physicians should be granted a voice in the administrative bodies of the insurance carriers. In such manner, mutual understanding between the physicians and the insurance carriers (especially the *krankenkassen*) will be best furthered. Furthermore, the demand is made that the right of all physicians to be admitted to panel practice if they so desire shall be legally recognized. If these preliminary conditions are accepted, the *Aerztetag* is in accord with the endeavors to protect the *krankenkassen* against unnecessary immoderate demands for medical assistance, which has been the general complaint of the *krankenkassen* since the beginning.

The fourth topic was "The International Organization of Labor and Its Significance for Social Hygiene in Germany." A paper was presented on Germany's lack of housing facilities. The injuries resulting therefrom, directly and indirectly, were discussed. The *Aerztetag* demanded that, before medical buildings are erected from public funds, it should be decided whether the contemplated buildings should be given preference in the face of the need of dwellings. The reform movement with reference to land control was also stressed.

Infantile Paralysis in Germany

In several foreign countries and in Leipzig an epidemic of infantile paralysis has developed. Up to September 29, there were 188 cases and eighteen deaths. Last year, the total number of cases in the state of Saxony was 108, with eight deaths. This year's epidemic, which, it would appear, has not yet been brought to a close, is, therefore, much more extensive.

Multiple Births in Prussia for the Year 1926

In Prussia, during the year 1926, there were two sets of quadruplets; 105 instances of triplets, and approximately 10,000 twin births.

Marriages

CLAUDE MATHEW DONAHUE, Carmel, Ind., to Miss Mildred Freeman of Indianapolis, at Noblesville, October 10.

STEWART HILTON CLIFFORD, Grand Forks, N. D., to Miss Ellinor Burnett of Baltimore, October 19.

ERNST GEHRELS, San Francisco, to Miss Kathryn Edessa Anderson of San Jacinto, Calif., July 27.

WILBERT ASHTON LIEBELER to Miss Frances Pierce, both of Grand Forks, N. D., in September.

RICHARD BENJAMIN HULLSIEK to Miss Stella F. Joerns, both of St. Paul, in September.

RICHARD K. KIMMEL, Decatur, Ill., to Miss Melba Mauer of St. Louis, October 10.

Deaths

Frank Sherman Meara ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1895; professor of clinical medicine and at one time professor of therapeutics, Cornell University Medical College; formerly instructor in pediatrics and materia medica at his alma mater; associate attending physician to St. Luke's Hospital, 1907; consulting physician to the Bellevue Hospital, New York, the Mountainside Hospital, Montclair, N. J., the Memorial Hospital, Morristown, N. J., St. Mary's Hospital, Orange, N. J., the Dover (N. J.) General Hospital, the Mount Vernon (N. Y.) Hospital, the Overlook Hospital, Summit, N. J., the Lawrence Hospital, Bronxville and the New York Infirmary for Women and Children; author of "Treatment of Acute Infectious Diseases"; aged 61; died, October 9, of septicemia and myocarditis.

Augustus Robert Taft ⊕ Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1895; professor of physical therapy and roentgenology at his alma mater; member of the Radiological Society of North America, the American Roentgen Ray Society and the American Radium Society; served during the World War; on the staff of the Roper Hospital; aged 53; died suddenly, September 20, of heart disease.

John Gilman Stanton ⊕ New Haven, Conn.; University of Wurzburg, Germany, 1873; on the staff of the Lawrence and Memorial Associated hospitals, New London; until 1920 acting assistant surgeon, U. S. Public Health Service; for many years president of the New London Board of Education; aged 78; died, September 28, at Amherst Mass., of heart disease.

Roy Milo Cox ⊕ San Luis Obispo, Calif.; Medical Department of the University of Southern California, Los Angeles, 1914; formerly attending physician to the San Luis Obispo County Hospital and on the staff of the Pacific Hospital, now known as the Mountainview Hospital; aged 37; died, September 4, in Chicago, of heart disease and nephritis.

Thomas F. Lancer, New York; University and Bellevue Hospital Medical College, New York, 1904; member of the Medical Society of the State of New York; served during the World War; formerly on the staffs of the Knickerbocker, New York Polyclinic and St. Vincent's hospitals; aged 45; died, September 24, of peritonitis.

George Worden Davis, Kansas City, Mo.; Medical Department of the University of the City of New York, 1876; formerly treasurer, curator and professor of genito-urinary and venereal diseases, University Medical College of Kansas City; aged 77; died, September 21, of angina pectoris.

Robert Isaac Tibbs, Sanatorium, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1903; formerly on the staff of the State Tuberculosis Sanatorium; aged 50; died, June 21, at the Scott and White Hospital, Temple, of tuberculosis.

John Mace, Cambridge, Md.; University of Maryland School of Medicine, Baltimore, 1887; member of the Medical and Chirurgical Faculty of Maryland; formerly on the staff of the Cambridge-Maryland Hospital; aged 66; died, September 26, of paralysis agitans.

Alfred Ernest Lemon ⊕ Sault Ste. Marie, Mich.; American Medical Missionary College, Chicago, 1901; served during

⊕ Indicates "Fellow" of the American Medical Association.

the World War; formerly on the staff of the Chippewa County Memorial Hospital; aged 52; died, August 16, of cerebral hemorrhage.

Otto Bergerson Fossum ✠ San Luis Obispo, Calif.; College of Physicians and Surgeons of San Francisco, 1909; formerly on the staff of the Pacific Hospital, now known as the Mountainview Hospital; aged 54; died, May 27, of pulmonary tuberculosis.

Donald Douglas Raber, Lead, S. D.; Creighton University School of Medicine, Omaha, 1907; member of the South Dakota State Medical Association; formerly on the staff of the Homestake Hospital, where he died, August 24, aged 42, of encephalitis.

Adelbert Townsend, Minatore, Neb.; Rush Medical College, Chicago, 1896; member of the Nebraska State Medical Association; aged 56; died, September 18, at the Methodist Hospital, Scottsbluff, of injuries received in an automobile accident.

Thomas William Cossey, Cullman, Ala.; Southern Medical College, Atlanta, 1891; member of the Medical Association of the State of Alabama; for many years county health officer; aged 64; died, August 29, of cerebral hemorrhage.

John Thomas Walsh, Cairo, Ill.; St. Louis College of Physicians and Surgeons, 1896; member of the Illinois State Medical Society; on the staff of St. Mary's Hospital, where he died, September 21, of diabetes mellitus, aged 56.

Otho M. Kelsay, Elk Horn, Ky.; Kentucky School of Medicine, Louisville, 1889; member of the Kentucky State Medical Association; past president of the Taylor County Medical Society; aged 73; died, July 17, of myocarditis.

Thomas W. Longfellow ✠ Martinsville, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1893; superintendent of the Hill House Sanitarium, where he died, September 22, aged 59, of diabetes mellitus.

Wade Hampton Saunders ✠ Roanoke, Va.; University College of Medicine, Richmond, 1903; served during the World War; formerly on the staff of the Roanoke Hospital; aged 50; died, September 19, of heart disease.

William Grout Dwinell, Pawtucket, R. I.; Harvard University Medical School, Boston, 1901; served during the World War; aged 49; died, September 21, at his home in Providence, of carcinoma of the rectum.

Alfred H. Thomas, Trenton, Neb.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1884; member of the Nebraska State Medical Association; aged 68; died, September 23, of heart disease.

Jacob P. Rinkel, St. Louis; St. Louis Medical College, 1881; member of the Missouri State Medical Association; aged 71; died, September 22, as the result of a cerebral hemorrhage, suffered some months ago.

Thomas D. M. Wilson, Washington, Pa.; Jefferson Medical College of Philadelphia, 1875; member of the Medical Society of the State of Pennsylvania; aged 74; died suddenly, September 25, of angina pectoris.

Reinhard Wernigk ✠ Los Angeles; Rush Medical College, Chicago, 1882; member of the American College of Physicians; aged 66; died, August 24, at the California Lutheran Hospital, of heart disease.

John Coleman McLeod ✠ Opp, Ala.; University of Alabama School of Medicine, Tuscaloosa, 1904; aged 49; died, September 7, at the Covington County Hospital, Andalusia, of intestinal obstruction.

Olin Duane Greene, Bethel, Vt.; University of Vermont College of Medicine, Burlington, 1879; member of the Vermont State Medical Society; aged 70; died, June 10, of carcinoma of the liver.

Ernest T. Fromen ✠ New Britain, Conn.; Milwaukee (Wis.) Medical College, 1897; formerly on the staff of the New Britain General Hospital; aged 61; died, September 28, of pneumonia.

Frank Ellsworth Hyer, Washington C. H., Ohio; Starling Medical College, Columbus, 1896; member of the Ohio State Medical Association; aged 58; died, September 23, of encephalitis.

George Edwin Whitten, Haverhill, Mass.; Dartmouth Medical School, Hanover, N. H. 1888; member of the Massachusetts Medical Society; aged 68; died, September 23, of lobar pneumonia.

Martin Fraser Minthorn, Sioux City, Iowa; Eclectic Medical Institute, Cincinnati, 1888; Illinois Medical College, Chicago, 1899; aged 62; died, September 17, of paralysis agitans.

John Henry Bloom, Youngstown, Ohio; Eclectic Medical Institute, Cincinnati, 1878; member of the Ohio State Medical Association; aged 72; died, August 23, of heart disease.

Paul Ernst Wiesel ✠ Montesano, Wash.; Denver and Gross College of Medicine, Medical Department, University of Denver, 1906; aged 50; died, August 20, of angina pectoris.

John Ellsworth Danielson, Brooklyn; Long Island College Hospital, Brooklyn, 1886; aged 67; died, September 18, of acute intestinal obstruction due to volvulus of the colon.

Benjamin C. Bettis, Wheetley, Ark.; University of Nashville (Tenn.) Medical Department, 1876; aged 80; died, September 19, in a hospital at Memphis, Tenn., of nephritis.

Charles William Massie, Richmond, Va.; Medical Department of the University of the City of New York, 1880; aged 71; died, September 26, of carcinoma of the bladder.

Max Gottesman ✠ New York; Cornell University Medical College, New York, 1899; on the staff of the People's Hospital; aged 51; died, October 10, of coronary thrombosis.

John Jay Platt, St. Paul; University of Minnesota Medical School, Minneapolis, 1895; served during the World War; aged 52; died, September 12, of pulmonary tuberculosis.

Herbert Ralph Clarke, Painesville, Ohio; Cleveland Homeopathic Medical College, 1900; aged 52; died, September 1, at the Lake County Memorial Hospital, of uremia.

Robert Earl Brinson, Wrightsville, Ga.; Atlanta Medical College, 1914; member of the Medical Association of Georgia; aged 36; died, September 28, of endocarditis.

Charles Prentiss Scudder ✠ Washington, Ind.; Miami Medical College, Cincinnati, 1881; aged 67; died, September 16, of arteriosclerosis and chronic myocarditis.

Edgar Frank Chase, Ann Arbor, Mich.; Pulte Medical College, Cincinnati, 1879; aged 69; died, September 25, of chronic nephritis and cerebral hemorrhage.

Gentry Beard Dowland, Wapanucka, Okla.; University of Tennessee College of Medicine, Memphis, 1914; aged 37; died, September 2, of cerebral hemorrhage.

William George Muir, Harper, Kan.; University of Michigan Medical School, Ann Arbor, 1884; aged 70; died, October 4, of myocarditis, following influenza.

Bertram I. Darmond, Brooklyn; Baltimore Medical College, 1904; aged 53; died, April 29, on the U. S. S. *New York,* while en route from New York to Boston.

John Luther Polk ✠ Champaign, Ill.; Jefferson Medical College of Philadelphia, 1868; aged 86; died, September 17, of uremia, following prostatic obstruction.

Andrew Peyton English, Jacksonville, Fla.; Atlanta Medical College, 1888; aged 70; died, September 18, of cystitis, pleurisy and hepatic insufficiency.

John Horace Lail, Seattle; Physio-Medical College of Indiana, Indianapolis, 1893; aged 62; died, July 8, of carcinoma of the prostate.

William F. Kier ✠ St. Louis; St. Louis Medical College, 1873; aged 78; died, September 30, of chronic myocarditis and arteriosclerosis.

William Donovan Ferris, Edmonton, Alta., Canada; University of Toronto (Ont.) Faculty of Medicine, 1898; aged 57; died in August.

William A. Skeel, Kampsville, Ill.; St. Louis College of Physicians and Surgeons, 1891; aged 61; died, September 22, of arteriosclerosis.

William Oakley Coffee, Davenport, Iowa; Missouri Medical College, St. Louis, 1881; aged 68; died, October 4, of heart disease.

Lloyd C. Thomas ✠ Detroit; Michigan College of Medicine and Surgery, Detroit, 1906; aged 48; died, September 29, of heart disease.

Madison A. Glentzer, Bryant, Ind. (licensed, Indiana, 1897); also a minister; aged 83; died, October 2, of cerebral hemorrhage.

Lesson B. Enloe, Coleman, Okla. (licensed, Oklahoma, under the Act of 1908); aged 73; died, recently, at Durant, of uremia.

Joseph Meitus, Cincinnati; Medical College of Ohio, Cincinnati, 1895; aged 59; died, October 4, of hypertrophy of the prostate.

William W. Greer, Austin, Texas; Atlanta Medical College, 1883; aged 72; died in September, of angina pectoris.

Jeptha C. Corselius, Colfax, Iowa (licensed, Iowa, 1886); aged 90; died, September 23, of pneumonia.

Correspondence

LIVER IN THE TREATMENT OF HEMERALOPIA

To the Editor:—A recent correspondent (Dr. Charles J. Mehlmann, THE JOURNAL, September 24, p. 1078) has called attention to the recommendation of the use of liver in the treatment of hemeralopia (night blindness) in Ernst Fuchs' Lehrbuch der Augenheilkunde (edition 12, 1910, pp. 661-662). The implication is that this represents one of the early recommendations of this type of dietotherapy.

It may be of interest to point out that references to a similar procedure are given in Pliny's writings. I am indebted to one of my university colleagues for the following translations from Pliny: He is speaking of she goats:

They say, too, that they can see at night just as well as by day, and that in consequence those who are called "night blind" regain their sharpness of sight in twilight if they eat the liver of a she goat.—Nat. Hist. **8:** 50 (76) 203.

They say that goats do not have sore eyes because they eat herbs, and so too with gazelles; hence they prescribe taking their excreta in a wax capsule at the time of the new moon. And as they see just as well by night, they think that the "night blind," whom the Greeks call nyctalopes, are cured by he goats' blood, or by she goats' liver boiled in strong wine. Some use the juice of roasted liver as an ointment, or the gall of a she goat, and prescribe eating the meat (i. e., of the liver) and steaming the eyes while it is cooking; they also think that it is important that it be of a reddish color.—Nat. Hist. **28:** 11 (47) 170.

Furthermore, a similar description is found in the writings of one of Pliny's contemporaries, Dioscorides:

The juice that flows from the liver of the she goat, when it is roasted, used as an ointment, benefits the "night blind"; and if one received with open eyes the steam of it when it is boiled, it helps. It is of benefit for the same ailment when eaten and roasted. They say that epileptics, too, are relieved most by eating the liver of a he goat.—De Materia Medica **2:** 47.

There is nothing new under the sun.

ARTHUR M. YUDKIN, M.D., New Haven, Conn.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

STETHOSCOPE FOR PHYSICIAN WITH IMPAIRED HEARING

To the Editor:—Is there anything in the way of a stethoscope which you could recommend to a physician who, having only one tympanum and that one perforated, gets no assistance or benefit from either a Pollard or a Fleischer stethoscope? Please omit name.

M.D., Virginia.

ANSWER.—When a stethoscope is used, hearing is by way of air conduction along the lumen of the tubing which is inserted into the ear. In the various diseases of the middle ear, hearing for low tones is greatly impaired. It is doubtful whether any other type of stethoscope would serve any better unless one with a diaphragm like the Bazzi-Bianchi-Bowles type is used.

HOMATROPINE IN OPHTHALMOLOGY

To the Editor:—Are ophthalmologists using homatropine in refraction as generally as they had in the past? Please omit my name.

M.D., New York.

ANSWER.—Ophthalmologists in America are using more homatropine for purposes of refraction than ever before. This is particularly true in the cities, where a refractive case can be seen more than once, while in the more rural communities, where frequent visits are next to impossible, circumstances govern the individual case. In patients below the age of presbyopia, it is extremely difficult to perform an even approximately accurate refraction without a cycloplegic, as any ophthalmologist of experience can testify. The public is becoming more and more aware of this fact, owing to the openly aired differences of opinion between the ophthalmic profession and the optometrists. The latter class are barred by law from the use of a cycloplegic and consequently rail at its use; owing to this legal handicap, they are endeavoring to discredit the use of a cycloplegic for refraction. Nevertheless, the fact remains that only by the aid of paralysis of the ciliary muscle can an accurate refraction be performed in a large proportion of cases.

SUGGESTED TREATMENT FOR STERILITY DUE TO IMPAIRED SPERMATOZOA

To the Editor:—A patient of mine is the father of a child, aged 7 years. He is anxious to gain another offspring. Several examinations of his spermatic fluid have been made and all reveal an abundance of nonmotile spermatozoa. Perhaps one in a dozen fields will be moving sluggishly. He has been treated by numerous genito-urinary men, who have passed sounds on him, have given him testicular extracts by mouth and hypodermically, and have given him prostatic massages and what not, with no improvement in the motility of the spermatozoa. The man is 35 and weighs about 160 pounds. His physical condition is good. His wife was examined by competent gynecologists, who did not find any abnormality. There is no venereal history in either, and their blood Wassermanns are negative. Can you suggest any treatment in this case? Would diathermy treatments to the prostate have any effect? Kindly omit name.

M.D., New York.

ANSWER.—In the patient referred to, diathermic treatment may be of possible benefit. The production of active hyperemia in the intrapelvic genital organs occasionally helps to produce live spermatozoa. Results are to be expected only from prolonged treatments. The tolerance of the rectum increases with each succeeding sitting, so that finally applications of half an hour's duration are possible. The magnitude of the high frequency current has to be kept within moderate limits. Heat that is raised to the limit of endurance while not producing coagulation will bring about precipitation of globulins, thus interfering with the functional vitality of the structures concerned.

TREATMENT OF CHANCROID

To the Editor:—Please give the best treatment for a venereal ulcer of six months' duration, which has resisted all forms of treatment. The Wassermann reaction is negative. The lesion is on the neck of the penis, extending to the corona toward the glans, and involves a small portion of the fold of the prepuce. Would mild fulgration help to cut down induration?

M.D., Michigan.

ANSWER.—Such chancroidal lesions are treated by means of the intravenous injection of a 1 per cent watery solution of antimony and potassium tartrate. As the initial dose, 3 cc. is given. The injections are repeated every other day, each successive dose being increased by 1 cc. up to 10 cc. The latter doses may be repeated if necessary. Serious reactions are not observed. About 30 per cent of patients treated in such a manner develop mild reactions, such as coughing, salivation and vomiting. These complications uniformly clear up in a few hours. Fulguration of the irregular granulations may be employed to advantage.

REMOVAL OF PROSTATE BAR USING RADIO FREQUENCY

To the Editor:—I should like to get information in regard to removal of the prostatic bar by the radio frequency method as suggested by Dr. Maximilian Stern and Dr. C. W. Collings of New York. I have read Dr. Stern's article in THE JOURNAL, Nov. 20, 1926. Could I get your opinion as to the relative merits of the radio frequency operation and the punch operation? Please omit name.

M.D., California.

ANSWER.—The available statistics are not yet sufficient to permit of a final opinion concerning the relative merits of the various endovesical methods recommended for excising the median parts of the so-called prostatic bar. Some writers hold that the complicated apparatus devised by Dr. Stern is in its curative effects not superior to those accomplished by simpler devices whose principle is the excising of part of the obstruction by a straight wire charged with a cutting current. The latter may be supplied either by radio frequency or by diathermy machines equipped with special condensers, for either of which methods it is claimed as an advantage that the excision is controlled by cystoscopic vision. The exponents of the punch operation are just as positive about the advantages of this method as are the advocates of the other procedures mentioned.

HOT MINERAL BATHS

To the Editor:—Will you kindly give the merits of hot mineral baths, and indications? During a summer season from 10,000 to 15,000 people visit Mount Clemens, Mich., to take these baths. Some present themselves to a physician for examination and ask for a bath prescription. Others take these baths on their own accord, often collapsing in the tubs. What I want to know is the value of these baths, indications and contraindications, and also the best temperature. Kindly omit name.

M.D., Michigan.

ANSWER.—The Mount Clemens mineral springs are unusually strong solutions of salines, chiefly sodium and magnesium chloride, giving off the pungent odor of hydrogen sulphide. They come from a considerable depth (800 to 1,200 feet) at a temperature of 50 F.; hence they are not thermal springs. The water is heated in the bath houses to whatever degree is required. Patients with chronic rheumatic, neuritic and neuralgic disturbances are especially likely to be benefited by treatment with such baths. For these conditions, the water may be used at full strength in the form of prolonged neutral baths at about body temperature (from 96 to 100 F.), which is employed in rather acute stages and for rather feeble patients. In the more chronic conditions and with more vigorous patients, hot tub baths (from 102 to 105 F.) are applicable.

For patients with diseased kidneys and a tendency to edema in whom a salt-poor diet is advantageous, the drinking of such water would, of course, be contraindicated. The use of hot procedures is dangerous in all conditions of profound general weakness, enfeeblement of the heart and degeneration of the arteries of such degree as to render the patient intolerant of the marked circulatory changes produced. Patients with a tendency to rise in temperature—for instance, the tuberculous—should also not be subjected to heat procedures.

It is well established that many of the more obstinate ills of mankind are relieved more readily by the simultaneous application of a variety of remedies indicated in the condition. Thus, massage and passive and active movement are often necessary adjuncts to bath treatment of chronic arthritic conditions to secure the best results. In metabolic disturbances, such as gout, dietetic restriction is of great importance. From all this it will be seen that medical supervision is absolutely required to secure good results; and what folly it is for people to go to Mount Clemens and other bathing resorts, jump into hot mineral baths and drink a lot of strong saline water, trusting to Providence to take care of the rest! No wonder some of them collapse in the tubs.

SCARLET FEVER ANTITOXIN

To the Editor:—What are the advantages of giving commercial scarlet fever antitoxin (*a*) as a preventive; (*b*) as a remedy? What are the disadvantages or harm that may come from its use? Please omit name.

M.D., Indiana.

ANSWER.—The advantages of giving commercial scarlet fever antitoxin are necessarily dependent on the accuracy of standardization of the preparation and its use in adequate dosage. On account of the difficulties encountered in standardization of scarlet fever preparations, it has not been possible for the Hygienic Laboratory of the United States Public Health Service to check the claims of manufacturers as to the potency of their scarlet fever antitoxin as thoroughly as the standardization of other products is checked. Although the strongest scarlet fever antitoxin yet obtained contains 35,000 neutralizing units per cubic centimeter, the labels of some commercial preparations have stated that the product contained 50,000, 60,000 or even 90,000 neutralizing units per cubic centimeter.

The chief advantage of giving commercial scarlet fever antitoxin as a preventive is that the administration of 100,000 neutralizing units prevents the development of clinical scarlet fever in a susceptible person already infected with scarlet fever streptococci but not yet sick. It must be kept in mind that this protection is transient. As soon as the antitoxin is eliminated from the body, the individual may again become susceptible to scarlet fever and should be more permanently protected by active immunization with graduated doses of the toxin.

The advantages of giving scarlet fever antitoxin as a remedy are the following:

1. If an adequate dose of the antitoxin is given, the toxin in the patient's body is neutralized and death from toxemia is prevented.

2. If the antitoxin is given early in the disease, both the incidence and the severity of complications are reduced.

3. As a rule, patients who receive scarlet fever antitoxin early in the disease get rid of the scarlet fever streptococci sooner than those who do not receive the antitoxin.

The disadvantages that may result from the use of scarlet fever antitoxin as either a prophylactic or a therapeutic measure are those which may result from the use of any horse serum preparation; namely, serum disease or anaphylactic shock in persons previously sensitized to horse serum. If the patient has ever had horse serum in any form previous to the administration of scarlet fever antitoxin, desensitization should be carried out before the full dose is injected.

ANAPHYLACTIC SHOCK

To the Editor:—I should like to report two cases of severe anaphylactic shock, one of which resulted fatally within the last six months. The first case occurred after the administration of 2.5 cc. of scarlet fever antitoxin for prophylactic purposes and resulted fatally within half an hour after the injection. The second case occurred after an administration of 1,500 units of tetanus antitoxin for prophylactic purposes. There was an extremely marked reaction about fifteen minutes following the injection. All the mucous membranes became markedly swollen, there was an edema of the glottis, the heart action was greatly increased in rate, and the patient, a healthy child of 9, presented a picture of general shock. After prompt administration of epinephrine, this child recovered rather slowly. In both of these cases the children had been immunized against diphtheria. It seems to me that the patients were sensitized against horse serum, with the results cited. In view of the extreme importance of such sensitization at the time of a subsequent use of horse serum, the profession in general ought to be warned against the dangers that immunized children are subjected to while receiving antitoxin.

HARRY LOWENS, M.D., Bronx, N. Y.

ANSWER.—In both these cases it appears to concern the injection of horse serum into children that previously had received horse serum in the form of diphtheria antitoxin. From the statement by our correspondent it is of course not possible to say whether the death of the first patient resulted from anaphylactic shock. The instance may be used, however, as a warning against giving scarlet fever antitoxin for prophylactic purposes except possibly after definite exposure to infection. The preventive effect of antitoxin lasts only two or three weeks or so and the antitoxin cannot be given in any other form at present than in more or less modified horse serum. If more permanent preventive immunization of susceptibles is desired, scarlet fever toxin, which does not contain any horse proteins if prepared properly, should be used.

In the second case there seems to be no question that a fairly typical immediate reaction developed.

It should be noted that serum reactions are more likely to occur in severe form after the use of unrefined or unconcentrated antitoxic serum. In all cases in which the patient has been given antitoxic horse serum previously, careful desensitization is demanded before giving horse serum in any form.

TANK X-RAY DEVELOPER

To the Editor:—Please give me a good formula for the preparation of a tank x-ray developer. Also send a formula for a tank fixing solution.

E. F. HOOVER, M.D., San Diego, Calif.

ANSWER.—Following is the formula for a much used developer:

Luke warm water	5 gallons
Motol (metol or elon)	1 ounce
Hydroquinone	8 ounces
Sodium sulphite	4 pounds
Sodium carbonate	2 pounds 2 ounces
Potassium bromide	1 ounce

The following is a successful x-ray fixing bath:

Hot water	4 gallons
Sodium hyposulphite	12½ pounds
Sodium sulphite	1½ pounds

Separate solution:

Cold water	1 gallon
Powdered chrome alum	1 pound
Sulphuric acid	1 ounce

Pour slowly into chrome alum solution. Then pour this into the hypo solution very slowly, and keep stirring. Cool before using.

Incidentally, the most practical and simplest manner of obtaining developer and fixing solutions for everyday x-ray work is to purchase the prepared powders obtainable from roentgen-ray and photographic supply houses. All that is necessary is to dissolve these powders in water.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Memphis, Nov. 14. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

ARKANSAS: Little Rock, Nov. 8-9. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville; Sec., Eclec. Bd., Dr. C. E. Laws, Ft. Smith.

CONNECTICUT: Hartford, Nov. 8-9. Sec. Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford. Sec., Homeopathic Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DELAWARE: Wilmington, Dec. 13-15. Sec., Reg. Bd., Dr. Henry W. Briggs, Wilmington. Sec., Homeo. Bd., Dr. Henry W. Briggs.

FLORIDA: Winter Haven, Nov. 14-15. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa.

KENTUCKY: Louisville, Dec. 6. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUSIANA: New Orleans, Dec. 8-10. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bldg., New Orleans.

MAINE: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. Henry M. Fitzhugh, Baltimore. Sec., Homeo- Bd., Dr. J. S. Garrison, Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.

NEVADA: Carson City, Nov. 7. Sec., Dr. Edward E. Hamer, Carson City.

NORTH CAROLINA: Greensboro, Dec. 1. Sec., Dr. John W. MacConnell, Davidson.

OHIO: Columbus, Dec. 7-9. Sec., Dr. H. M. Platter, Columbus.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 505 Saluda Ave, Columbia.

TEXAS: Fort Worth, Nov. 15-17. Sec., Dr. T. J. Crowe, 918-19 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 6-9. Sec., Dr. J. W. Preston, Roanoke.

WEST VIRGINIA: Morgantown, Nov. 22. Sec., Dr. W. T. Henshaw, New Capitol Bldg., Charleston.

WISCONSIN: Milwaukee, Dec. 17. Sec., Basic Science Bd., Prof. M. F. Guyer, Madison.

California May Examination

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, May 17-19, 1927. Of the 65 candidates examined, 61 passed and 4 failed. Fifty-five candidates were licensed by reciprocity, and 2 were licensed by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1927)	80.8, 81.4, 81.8, 82.2, 82.6, 84.1, 84.9, 85.1, 85.2, 85.2, 85.3, 86.3, 86.4, 87, 87.1, 87.2, 87.6, 87.7, 87.7, 88.1, 88.8, 89.8, 90.6
Stanford University School of Medicine		(1925	86.7
University of California Medical School		(1927)	79.6, 84.3, 86.6, 87.3, 88.4, 89.7.
Loyola University School of Medicine		(1925)	78.6
Northwestern University Medical School		(1925) 80.4; (1926)	83.7
Rush Medical College		(1923) (1925) 85.4, (1926) 84.2, (1927) 84, 84.6.	86.4
University of Illinois College of Medicine		(1926)	86.4
Indiana University School of Medicine		(1926)	81.1
State Univ. of Iowa Coll. of Med		(1924) 85.2; (1926)	82.7, 89.9
University of Kansas School of Medicine		(1925) 84.6; (1926)	86.9
Johns Hopkins University School of Medicine		(1925)	81.3
Harvard University Medical School		(1925)	88.2
University of Michigan Homeopathic School		(1904)	75.2
University of Michigan Medical School		(1926)	84.7
University of Minnesota Medical School		(1927)	86.3, 88.1
Creighton University School of Medicine		(1926)	89.1
University of Nebraska College of Medicine		(1926)	84.7
University of Oregon Medical School		(1926)	85.2, 85.8
University of Manitoba Faculty of Medicine		(1926)	85.9
University of Toronto Faculty of Medicine (1918) 83.7; (1924) 79.9.		(1909)	76.3
University of Rome, Italy		(1922)*	78.3
Univ. of San Luis Potosi School of Medicine, Mexico		(1906)*	79.8

College	FAILED	Year Grad.	Per Cent
University of Buffalo School of Medicine		(1926)	71
Tokyo Woman's Special Medical School		(1920)*	58.1
National School of Medicine, Mexico		(1918)*	70.3
University of Kharkov, Russia		(1898)*	67.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, San Francisco		(1906)	Nevada
Denver College of Medicine		(1901)	Utah
George Washington University Medical School		(1905)	Dist. Colum.
Chicago Coll. of Med. and Surgery (1912) Illinois;		(1916)	Montana
General Medical College, Chicago		(1924)	Indiana
Loyola University School of Medicine		(1916)	Illinois
Rush Medical College (1899) Iowa, (1901, 2), (1904) (1909) (1916) Illinois (1921) Territory of Hawaii (1924) Florida.			
University of Illinois College of Medicine (1912) Illinois		(1904)	Montana, Oregon
Fort Wayne College of Medicine		(1905)	Indiana
State University of Iowa School of Medicine (1907) Iowa		(1898)	N. Dakota
University of Louisville School of Medicine		(1894)	Tennessee
Atlantic Medical College, Baltimore		(1908)	Maryland
Johns Hopkins University School of Medicine		(1914)	Illinois
Harvard University Medical School		(1916)	Colorado
Detroit College of Medicine and Surgery		(1899)	Illinois
University of Michigan Medical Scnool		(1883)	Michigan
University of Minnesota Medical School		(1926), (1927)	Minnesota
Barnes Medical College, St. Louis		(1900)	Arkansas
St. Louis University School of Medicine		(1914)	Missouri
University Medical College of Kansas City		(1900)	Kansas
Creighton University School of Medicine		(1913)	Nebraska
University of Nebraska College of Medicine		(1921)	Nebraska
Bellevue Hospital Medical College		(1885)	Iowa
Columbia University College of Physicians and Surgs.		(1924)	New York
Cornell University Medical College		(1922), (1924)	New York
University and Bellevue Hospital Medical College		(1914)	New York
Medical College of Ohio		(1889)	Montana
Ohio Medical University		(1896)	Colorado
University of Cincinnati Medical Department		(1897)	Illinois
University of Oklahoma School of Medicine		(1914)	Oklahoma
University of Oregon Medical School (1923) Washington		(1912), (1923), (1925)	Oregon
University of Pennsylvania School of Medicine (1913) Pennsylvania, (1925) New York		(1904)	New Jersey
University of Pittsburgh School of Medicine		(1912)	Penna.
Memphis Hospital Medical College		(1903)	Montana
Baylor University College of Medicine		(1925)	Texas
University of Virginia Department of Medicine		(1898)	Dist. Colum.
University of Rostock, Germany		(1917)	Oregon

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
University of Nebraska College of Medicine		(1925)	U.S.P.H.S.
University of Pennsylvania School of Medicine		(1906)	U. S. Navy

* Verification of graduation in process.

Nebraska June Examination

Mr. Lincoln Frost, secretary of the Department of Public Welfare of the Nebraska Bureau of Examining Boards, reports the written examination held, June 7-9, 1927, at Omaha. The examination covered 10 subjects and included 83 questions. An average of 70 per cent was required to pass. Of the 92 candidates examined, 87 passed and 5 failed. Eleven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Indianapolis Medical Department		(1896)	81.8
Creighton University School of Medicine		(1927)	81.5, 82.5, 82.7, 83.1, 83.8, 83.8, 84, 84.6, 84.7, 84.9, 84.9, 84.9, 84.9, 85, 85, 85.1, 85.1, 85.1, 85.3, 85.3, 85.6, 85.7, 85.8, 86.1, 86.1, 86.5, 86.5, 86.8, 86.8, 87, 87.1, 87.4, 87.5, 87.7, 87.9, 88.1, 89.7
Lincoln Medical College		(1896)	82
University of Nebraska College of Med		(1925) 86.3, (1927)	81, 81.5, 81.5, 81.7, 82.1, 82.4, 83.2, 83.2, 84, 84.1, 84.1, 84.1, 84.3, 84.6, 84.6, 84.8, 84.8, 84.8, 84.9, 85, 85.1, 85.2, 85.3, 85.5, 85.6, 85.6, 85.6, 85.8, 85.9, 85.9, 86, 86.2, 86.7, 86.8, 86.9, 87.1, 87.1, 87.2, 87.2, 87.3, 87.4, 87.5, 87.9, 88.3, 88.3, 89.6

College	FAILED	Year Grad.	Per Cent
Tufts College Medical School		(1906)	80.3
Creighton University School of Medicine		(1927)	82, 82.8
University of Nebraska College of Medicine		(1927)	81.8, 82.8

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Bennett Medical College, Chicago		(1910)	Illinois
College of Physicians and Surgeons, Chicago		(1904)	S. Dakota
Northwestern University Medical School		(1923)	Iowa
State College of Phys. and Surgs., Indianapolis		(1907)	Indiana
University of Michigan Medical School		(1924, 2)	Michigan
University of Minnesota Medical School		(1921)	Minnesota
St. Louis College of Physicians and Surgeons		(1909)	Tennessee
University Medical College of Kansas City		(1906)	Kansas
Women's Medical College of Philadelphia		(1915)	Penna.
University of Glasgow, Scotland		(1923)	Ohio

Maine July Examination

Dr. Adam P. Leighton, secretary of the Maine Board of Registration of Medicine and Surgery, reports the oral and written examination held at Bangor, July 5-6, 1927. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Of the 14 candidates examined, 11 passed and 3 failed. Four candidates were licensed by reciprocity and 2 were licensed by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine		(1926)	87
Georgetown University School of Medicine		(1927)	81
Boston University School of Medicine		(1900) 85, (1927)	84
Harvard University Medical School		(1927)	88
Tufts College Medical School		(1897)	80

Jefferson Medical College of Philadelphia	(1926)	85
Laval University Faculty of Medicine	(1926)	77
McGill University Faculty of Medicine	(1925) 91; (1926)	80
University of Manitoba Faculty of Medicine	(1899)	88

College	FAILED	Year Grad.	Per Cent
Laval University Faculty of Medicine	(1925) 58.6;	(1926)	74
University of Ghent, Belgium*		(1922)	14

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Maryland School of Medicine		(1884)	Penna.
Harvard University Medical School		(1924)	Michigan
Dartmouth Medical School, Hanover		(1896)	New Hamp.
Long Island College Hospital		(1890)	New Hamp.

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Harvard University Medical School		(1918)	(1925) N. B. M. Ex.

* Verification of graduation in process.

Book Notices

CYSTOSCOPY. A Theoretical and Practical Handbook containing Chapters on Separate Renal Function and Pyelography. By Jas. B. Macalpine, F.R.C.S., Honorary Surgeon and Surgeon in Charge of the Genito-Urinary Department, Salford Royal Hospital, Manchester. Cloth. Price, $7. Pp. 284, with 181 illustrations. New York: William Wood & Company, 1927.

This book fills a gap in English books on urology. For a number of years the German and French monographs devoted to cystoscopy have been generally employed in England and the United States. Such a valuable addition to diagnostic resources is welcome. A large number of illustrations in color are the work of the master hand of Thornton Shiells. Many instructive diagrams also help to explain the more technical side of the subject. There are few unfavorable criticisms to be made. One of these is that a book which will probably have a large circle of readers in the United States should devote more space to the construction and mode of application of the type of cystoscopes that are almost exclusively employed here. Another suggestion is that in a book written for urologists, explanations of the etiology, symptoms and treatment of the various conditions which give rise to cystoscopic and ureteral orifice changes seem superfluous. Aside from these seemingly minor faults, the book is to be highly recommended as a conscientious and efficient effort to cover a rather difficult subject.

THE DETERMINATION OF SULPHUR DIOXIDE IN FOODS. By G. W. Monier-Williams, O.B.E., M.A., Ph.D. Reports on Public Health and Medical Subjects. No. 43. Paper. Price, 1s. 3d. net. Pp. 56. London: His Majesty's Stationery Office, 1927.

The author gives a review of the literature and methods for the determination of free and combined sulphurous acid. Sulphurous acid combines with aldehyde and ketone groups in foods and can be separated from the combination rapidly on addition of alkali and more or less slowly on distillation with acid. Distillation according to one or other of the various modifications proposed is the only reliable method for the majority of foods. Titration of the sulphur dioxide in the distillate, either as such or after oxidation to sulphuric acid, gives accurate results if precautions are taken to eliminate volatile organic compounds. Distillation in a current of carbon dioxide through a reflux condenser into pure hydrogen peroxide, and titration of the sulphuric acid formed, can be applied with satisfactory results to all foods. With dried fruits the last traces of sulphur dioxide are given off with extreme slowness on boiling, even in strongly acid solution. Gravimetric determination as barium sulphate gives accurate results in nearly all cases. Oxidation with hydrogen peroxide and precipitation at room temperature with barium chloride permit a sharp distinction between sulphur dioxide and other volatile sulphur compounds, including hydrogen sulphide. The author describes a method which has been evolved from several well known methods. It consists essentially of distillation in a current of carbon dioxide through a reflux condenser in a pure neutral hydrogen peroxide titration of the sulphuric acid formed. The advantages of the method are that errors due to hydrogen sulphide and volatile organic sulphide compounds are eliminated. The sulphuric acid found being due to sulphur dioxide alone, volatile acids do not pass over and interfere with titration, and it is not necessary to carry out a gravimetric determination except when very small quantities of sulphur dioxide are in question. A description of the author's apparatus is given in which direct distillation is used. [Some prefer a second flask as a source of steam for the steam distillation, which prevents the charring of food material when direct heat is applied.]

ANATOMICAL, PHYLOGENETICAL AND CLINICAL STUDIES ON THE CENTRAL NERVOUS SYSTEM. By B. Brouwer, Professor of Clinical Neurology, University of Amsterdam. The Herter Lectures of the Johns Hopkins University. Volume XVII, 1926. Cloth. Price, $2.50. Pp. 67, with 16 illustrations. Baltimore: Williams and Wilkins Company, 1927.

The first lecture reports Dr. Brouwer's researches on the projection of the retina in the brain, which are of great theoretical and clinical importance. In rabbits, cats and monkeys the degenerations resulting from localized experimental lesions in the retina were studied by Marchi's method. The course and distribution in the external geniculate bodies of fibers from the retinal quadrants and the macula are accurately charted. No peripheral optic fibers terminate in the pulvinar, and this center is not a part of the central optic path. It probably is concerned with stereoscopic vision and other higher visual functions. The arrangements differ widely in the three animals, and the monkeys so closely resemble man that the pattern here revealed can probably be employed with little change in the analysis of clinical cases. The retinal fields are precisely localized in the geniculate bodies, and Dr. Brouwer is of the opinion that these fields are also separately represented in the cortex, though his studies of this question are incomplete. In the second lecture, on the pathology of sensibility, after a review of Head's work, attention is called to the difference between the "vital" type of sensibility transmitted by the ventrolateral fasciculi of the cord and the "gnostic" type transmitted by the dorsal fasciculi. The latter system is absent in fishes and increases progressively up to man. The former is always present and is closely connected with the autonomic system. The "vital" type of sensibility shows more evident segmentation, as illustrated by cases of syringomyelia; the "gnostic" or non-autonomic system is unsegmented, as illustrated by early stages of some cases of pernicious anemia. The third lecture reviews the significance of phylogenetic studies for the neurologist. Phylogenetic and embryologic studies of the cerebellum and the cerebral cortex reveal the causes of some peculiar patterns of pathologic degenerations. In these cases the phylogenetically and embryologically younger parts show greater injury from the pathologic process. The irregular and apparently lawless symptoms of disseminated sclerosis are clarified by the same principle.

MANUEL DE NEUROLOGIE. Tome I. L'anatomie du système nerveux. Une tentative de grouper en système fonctionnel les voies et les centres, de localisation diverse, par lesquels les diverses impressions sensorielles peuvent se traduire en réactions réflexes. Troisième partie. Les systèmes nucléaires dans le pont de varole et dans le pédoncule cérébral. Le système nerveux considéré comme organe d'association réciproque. Le cervelet. Opera omnia. Tome VIII. Par le Dr. C. Winkler, professeur de neurologie et de psychiatrie à l'Université de l'État à Utrecht. Paper. Pp. 377, with 160 illustrations. Haarlem: Erven F. Bohn, 1927.

In 1918 the voluminuous works of Dr. Winkler were collected and published in six imposing volumes of the "Opera Omnia." The last of these volumes contains the first part (French text) of a comprehensive Anatomy of the Nervous System, devoted to the apparatus of olfaction, vision, general sensibility and taste. The seventh volume, appearing in 1921, contains part 2 of the "Anatomy," developed to the nervous apparatus of the fifth and the eighth cranial nerves. The eighth volume contains part 3, devoted to the pons, cerebral peduncle, cerebellum and general considerations relating to mechanisms of reciprocal association of reflexes at different levels. This review will be limited to a few comments on the last mentioned theme (chapter XI). Taking his departure from Hughlings Jackson's doctrine of levels, he points out first that not only are the functions of the higher correlation centers influenced by those of the lower segmental centers, but conversely the latter are constantly under the influence

of the former. The spinal animal, the bulbar animal, and so on, do not show us the normal functions of the surviving parts of the nervous system, for normally these surviving parts are always working in reciprocal relationship with the higher centers. The destruction of one component of the complex connections of the higher centers impairs not only the associational functions of these centers but also the simpler reflexes of the lower centers, as appears, for example, in the contractures of hemiplegia. A clinical analysis of diaschisis effects must take account of the following principles: (1) One must have a clear idea of the (*a*) anatomic associational pathways between the several reflex mechanisms involved; (*b*) the successive stages of the elaboration of the reflex combinations involved, and (*c*) the mutual relationships of these combinations, and (2) the biologic evolution of all of the functions involved must be taken into account. The time factors (chronogène of Monakow) of individual and phylogenetic development of the affected complex are very important, and differences in sequence of acquisition of various associations by different patients account for much of the individual variability of symptoms following very similar lesions. The doctrine of localization has only relative value. No parts of the nervous system are independent organs. The associations are circular functions, as is brought out perhaps most clearly by the reciprocal relations of the cortex of the cerebrum and the cerebellum. In the succeeding parts of this manual the associational mechanisms are taken up according to the conventional anatomic regions; but each region (such as the cerebellum and the mesencephalon) is regarded as a nodal point in a complex system of interconnected pathways, and the functional systems are the real units.

THE DETERMINATION OF BENZOIC ACID IN FOODSTUFFS. By G. W. Monier-Williams, O.B.E., M.A., Ph.D. Reports on Public Health and Medical Subjects No. 39. Paper. Price, 1s. net. Pp. 20, with 1 plates. London: His Majesty's Stationery Office, 1927.

This gives a critical review of the literature on the isolation and purification of benzoic acid in foodstuffs. The usual tests for benzoic acid are reviewed. The removal or destruction of proteins is almost always necessary, as emulsions form during extraction and the proteins retain benzoic acid. The removal of the proteins may lead to a loss of benzoic acid. Steam distillation is successful with nonfatty foods if certain precautions are observed. Sublimation is the best and most reliable method, but may fail if any considerable amount of impurity is present. The most delicate test for benzoic acid is Mohler's test. The ferric chloride test is somewhat less delicate but more characteristic. The most characteristic test is Jonnesco's, if those which depend on the sense of smell are excepted. Benzoic acid occurs naturally in the berries of certain plants of the order of *Vaccinium*, which includes the American cranberry. A new distillation method is described which is said to give good results when applied to the determination of benzoic acid in certain typical fruits. Permanganate is added to the distillate (which has been reduced to 30 cc.) to oxidize salicylic acid if present, until a definite "pink" persists for several minutes. The excess of permanganate is destroyed with sodium sulphite. After acidification with sulphuric acid and extraction, the solvent is evaporated. A modified Polenske sublimation is carried out and the sublimate weighed.

HANDBUCH DER INNEREN SEKRETION. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Dr. Max Hirsch. I. Band, Lieferung 3 und III. Band, Lieferung 2. Paper. Price, 15 marks and 32 marks. Pp. 337-472, and 203-589, with illustrations. Leipsic: Curt Kabitzsch, 1927.

This is a continuation of the ambitious work of which previous numbers have already been reviewed. Part 3 of volume I contains two chapters on normal and pathologic anatomy, and embryology of the thyroid and parathyroid by Drs. Berberich and Fischer-Wasels of Frankfort. Part 2 of volume III contains chapters on clinical manifestations of hypophysis disorders, by Dr. Josefson of Stockholm; disorders of the hypophysis, by Dr. Aschmer of Vienna; disorders of the suprarenals, by Drs. Ehrmann and Dinkin of Berlin; clinical pathology of the female sex organs as related to endocrine disorders, by Drs. Herschan and Geller of Breslau; disturbances of pregnancy, by Dr. Hermstein of Breslau; the mammary glands in their relation to internal secretion, by Dr. Hirsch; and, finally, a chapter on the clinical pathology of tumors of the endocrine glands as related to the genitourinary system, by Dr. Fraenkel of Breslau. Most of the chapters are excellently illustrated with histologic, pathologic and clinical material. Appended to each chapter are extensive references to the literature. In such a composite work the chapters are necessarily of unequal value as regards logical arrangement of material, clearness in thinking, and conservatism in speculation; but, on the whole, these two sections of the larger work compare favorably with previous sections and with similar treatises in this field.

THE INJECTION TREATMENT OF VARICOSE VEINS. By A. H. Douthwaite, M.D., M.R.C.P. Paper. Price, 3s. net. Pp. 39. London: H. K. Lewis & Company, Ltd., 1927.

This small paper bound book is a sequel to the author's article on the treatment of varicose veins by means of injections of quinine, which appeared in the *British Medical Journal*, Sept. 25, 1926. It is based on a great deal of experience. One might hesitate to treat a patient while he was playing in a tennis tournament, as Douthwaite has done successfully. Nevertheless, his results have been uniformly happy and he sees for his method the following advantages: first, absence of danger of postoperative embolism and of the discomfort of general anesthesia; second, noninterference with the patient's daily work; third, willingness of the patients to undergo this treatment, as contrasted with their disposition to suffer chronic disease rather than to undergo surgical operation. Douthwaite favors quinine salts as injection material but gives, also, several alternative solutions. He outlines intravenous and the less often necessary perivenous methods of injection. In one chapter he takes up the effects of injection and in a shorter chapter he deals with the treatment of varicose ulcers and hemorrhoids. The author explains the mechanism of the changes produced in the veins, and offers evidence to show that the flow of blood in varicose veins, when the part is properly placed, is centrifugal rather than centripetal. A short section on contraindications closes the monograph. The essay constitutes a good handbook for use by the increasing number of physicians who are becoming interested in this method of treatment of varices.

LE TRAITEMENT DES VARICES PAR LES INJECTIONS LOCALES SCLÉROSANTES. Par J. A. Sicard, médecin de l'Hôpital Necker, et Dr. L. Gaugier, licencié ès sciences. Paper. Price, 12 francs. Pp. 100, with illustrations. Paris: Masson & Cie, 1927.

This book is similar to but is larger than Douthwaite's monograph on the same subject. It represents the work of two of the authors who have done most to popularize intravenous injections in the treatment of varicose veins. It contains chapters on the history of the method; the pathology, physiology and the etiology of varices; the pathologic anatomy of varices which have been submitted to sclerosing injections; contradictions to the sclerosing method; technic; the effects of the sclerosing treatment and the question of recurrence; comparison of various sclerosing substances and the dosage of each; treatment associated with and consecutive to sclerosing injections; sclerosing injections in varices complicated by other conditions, and, finally, the treatment of hemorrhoids. These authors favor sodium salicylate (salicylate de soude) as the injection material, having abandoned the earlier method of sodium carbonate injection. One familiar with French would find this booklet highly informative and useful as a guide to the employment of the various methods.

DIE THERAPIE AN DEN BERLINER UNIVERSITÄTS-KLINIKEN. Herausgegeben von Dr. Wilhelm Croner. Ninth edition. Cloth. Price, 14 marks. Pp. 632. Berlin: Urban & Schwarzenberg, 1927.

This is a useful reference book reflecting the practice of the university clinics in Berlin in such a manner as to be of real service to the practicing physician.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

A SHORT MANUAL OF INDUSTRIAL HYGIENE. For Managers, Foremen, Forewomen and Industrial Supervisors Generally. By Leonard P. Lockhart, M.A., M.B., B.Ch., Medical Officer, Messrs. Boots Pure Drug Co., Ltd., Nottingham. With a foreword by the Rt. Hon. Lord Invernairn. Cloth. Price, 3/6d. net. Pp. 114, with illustrations. London: John Murray, 1927.

Practical handbook with primary reference to British conditions.

PSYCHOPATHOLOGY: Its Development and Its Place in Medicine. By Bernard Hart, M.D., F.R.C.P., Physician in Psychological Medicine, University College Hospital and National Hospital, Queen Square, London. Cloth. Price, $2.40. Pp. 156. New York: Macmillan Company, 1927.

Reprint of three Goulstonian lectures tracing beautifully the growth of mental diagnosis and treatment.

A TEXT-BOOK OF GYNECOLOGY. By James Young, D.S.O., F.R.C.S., M.D., Physician, Royal Maternity Hospital. Second edition. Cloth. Price, $2.75. Pp. 338, with 183 illustrations. New York: Macmillan Company, 1927.

New edition of handbook reflecting Edinburgh practice.

THE ANALYSIS OF MATTER. By Bertrand Russell, F.R.S. Cloth. Price, $6. Pp. 408. New York: Harcourt, Brace & Company, Inc., 1927.

Profound philosophical discussion of the nature of matter which seems to be something with periodic rhythms.

SEX AND REPRESSION IN SAVAGE SOCIETY. By Bronislaw Malinowski. Cloth. Price, $3.50. Pp. 285. New York: Harcourt, Brace & Company, Inc., 1927.

A psychoanalytic survey of the Melanesian matriarchy.

THE ELEMENTS OF PHARMACOLOGY. By W. A. Osborne, M.D., D.Sc., Professor of Physiology, University of Melbourne. Cloth. Price, 10/6d. Pp. 137. Melbourne: W. Ramsay, 1927.

Handbook for Australian practitioners.

HANDBUCH DER INNEREN SEKRETION. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Band III. Lieferung 3. Herausgegeben von Dr. Max Hirsch. Paper. Price, 22 marks. Pp. 591-838, with 68 illustrations. Leipsic: Curt Kabitzsch, 1927.

OPUSCULA SELECTA NEERLANDICORUM DE ARTE MEDICA. Fasciculus sextus quem curatores miscellaneorum quae vocantur Nederlandsch Tijdschrift voor Geneeskunde. Collegerunt et ediderunt. Cloth. Pp. 352, with illustrations. Amsterdam: Erven F. Bohn, 1927.

SCIENTIFIC REPORTS FROM THE GOVERNMENT INSTITUTE FOR INFECTIOUS DISEASES. Volume V for the Year 1926. Edited by Dr. Yoneji Miyagawa. Paper. Pp. 651, with illustrations. Tokyo: Shirokane-Daimachi, Shibaku, 1927.

ACUTE RHEUMATISM IN CHILDREN IN ITS RELATION TO HEART DISEASE. Reports on Public Health and Medical Subjects. No. 44. Paper. Price, 1s. 6d. net. Pp. 99. London: His Majesty's Stationery Office, 1927.

THE DECLINE IN LEAD-POISONING. By Frederick L. Hoffman, LL.D., Consulting Statistician, Prudential Insurance Company. Paper. Pp. 20. Newark: Prudential Insurance Company of America, 1927.

ELETTROCARDIOGRAFIA. Tecnica. Fisiologia. Patologia. Por Carlo Dalla Rosa, assistente clinica medica di Bologna. Paper. Price, 30 lire. Pp. 195, with illustrations. Bologna: L. Cappelli, 1926.

PUBLIC HEALTH LAWS OF THE STATE OF NORTH DAKOTA. Rules and regulations of the State Department of Health made in conformity therewith. Paper. Pp. 91. Bismarck, 1927.

TRANSACTIONS OF THIRTY-NINTH ANNUAL MEETING OF THE SOUTHERN SURGICAL ASSOCIATION. Volume XXXIX. Cloth. Pp. 355, with illustrations. The Association, 1927.

LA TETANIA NELL'INFANZIA. Por Dott. S. Fabris. Paper. Price, 30 lire. Pp. 180. Naples: La Pediatria, 1927.

L'ANGINA DI PETTO. Por Prof. s. La Franca. Paper. Price, 8 lire. Pp. 37. Bologna: L. Cappelli, 1926.

Miscellany

OPPOSITION OF MEDICAL PROFESSION TO THE PROPOSED LAW PERTAINING TO SOCIAL INSURANCE IN FRANCE

Scarcely had the proposed law pertaining to social insurance been approved by the senate when an opposition more violent than was manifested before the vote was taken in the senate was organized in the medical "syndicates" throughout France. The text of the law in the form in which it was hastily passed by the chamber of deputies, five years ago, was so profoundly altered by the senate after two months of prolonged and confused discussion that it must be subjected to renewed consideration by the chamber, since no bill becomes a law in France until the two houses of parliament have reached an agreement in regard to every detail of the text. The physicians are in hopes that when the bill comes up in the chamber for reconsideration they may obtain modifications of the provisions against which they complain. They are doubtless doomed to be disappointed. New members will be elected to the chamber the coming year. The candidates have already begun their electoral campaign, and it is a foregone conclusion that they will not support the proposals of the physicians. The law will work great detriment to the medical profession. However, an event has transpired that may have a great influence on the spirit in which the law will be applied; that is, if the chamber approves the recent disposition of the senate. M. Caillaux has induced the senate to add to the bill a clause providing that the administrative duties in connection with the social insurance system shall be performed gratuitously. Such provision will constitute a considerable saving in the administration of the new services, and will prevent positions being sought as political favors. The medical profession is facing two possible solutions of the question. It may refuse in a body to have anything to do with the social insurance system about to be established, and treat patients who come to them of their own accord as ordinary clients, exacting from them the usual fees, leaving it entirely to the insured to reimburse himself through the *"caisses"* to the extent that the law may provide. This solution, which has been called *"l'entente directe,"* or the direct agreement, has been supported by Dr. Fantin of Andon, president of the "syndicate" of the physicians of the department of the Seine. It does not seem likely, however, that it can be put into practice, for young medical graduates not affiliated with the "syndicates" will be found who will be glad to accept the modest fees proposed, in order to get started and to secure the nucleus of a patronage. A second solution would consist in accommodating oneself to the new legislation and trying to effect a conciliation, counting on the outcome of the new debates on the bill to be held in the chamber of deputies. The attention of the chamber may be called to the inevitable fact that the insured will receive poor treatment in the application of the proposed system; that consultations and visits will be reduced to two minutes' duration, so that the physician may make as many as possible in a short space of time. The medical profession desires particularly that the *caisses* shall not treat directly with the individual physicians, whether affiliated or not with the "syndicates," but with the "syndicates" themselves, which would seek to obtain reasonable conditions for the physicians. That is the attitude that was taken toward the application of previous legislation with regard to occupational accidents and to war pensioners. The physicians fear, above everything, that they may be reduced to mere state functionaries. They fear likewise lest the special hospitals that the *caisses* plan to establish for their insured may function in a manner similar to the numerous loosely organized clinics which have sprung up of late in industrial centers for the benefit of industrial workers injured by accidents, and which at times give rise to scandalous abuses owing to the connivance of unscrupulous practitioners with injured workmen who have in point of fact fully recovered from their injuries, with the result that the funds of the state and of the insurance companies are misappropriated by fraudulent practices. Several scandalous dis-

closures have been made involving the duplicity of physicians who have wrongfully issued to the insured large numbers of official medical blanks, not to discuss in detail their connivings with pharmacists in prescribing expensive and useless products, in the profits from the sale of which the physicians shared. It should be borne in mind that the proposed law, if it becomes effective, will transform more than half the population of France into holders of a policy that will insure them against all forms of disease. Under these conditions, that is to say, if the proposed law comes to be applied in its present form, the majority of the members of the medical profession in France will soon find themselves in a desperate situation.

HEREDITY AND THE TRANSMISSION OF GENIUS

In view of the marked decrease in the birth rate, which at present is observable in all civilized countries, it is interesting to note how many famous men have sprung from large families. The question has been studied for the past twenty years by Professor Lockemann, chemist in the Robert Koch Institute, and he has collected reliable information on eminent men in the fields of politics, science and art. He recently presented the results of his researches before the Berliner Gesellschaft für Geschichte der Naturwissenschaften, Medizin und Technik.

Lockemann took for his point of departure the generally recognized fact that the population of a country can be kept at the accustomed level only when an average of from three to four children are born in each family. In the upper classes this average is not maintained, so that the older established families are rapidly diminishing in numbers. China is possibly the only country in which the number of children per family is greater among the higher classes than among the lower; in all other countries there is a decrease in the upper classes, it being the least marked in Russia. That a greater number of talented children spring from the upper classes is likewise an established fact. Auguste de Condolle, the eminent Swiss botanist, studied the family histories of a hundred foreign members of the Paris Academy of Sciences over a period of two centuries and found that approximately forty-one were sprung from the nobility, aristocratic urban families living on the income from their properties; fifty-one were descendants of middle-class families, which includes the professors and the physicians, with an assured income, and seven were descended from the lower strata of society. De Condolle found similar results on examining the records of distinguished French scientists over a period of two centuries. The reason for this lies partly in the fact that it is more difficult for a member of the lower classes of the population to rise, so that the prospect of getting able men from their ranks is very slight. If, however, the upper strata of society check by artificial means and the adoption of the "two children system" the hereditary transmission of their good qualities, the number of talented children born will constantly decrease and the general intellectual level will fall, for, with a large number of children, the possibility that two favorable germ elements out of the whole mass will unite is much greater than when only two children are born. Furthermore, in large families the whole milieu tends to develop a spirit of independence and a feeling of responsibility, as is clearly brought out by the reminiscences of Emil Fischer and of Werner von Siemens.

However, not all eminent men have sprung from large families. Often an only child rises to a position of eminence. Lockemann mentions, among others, Hans Sachs, the mathematician Gauss, the poet Grabbe, Rudolf Virchow, and the philosophers Herbart and Eduard von Hartmann, whose father and grandfather, as well, were the "only child" of their parents. As members of families with more than four children he has collected a list of 118 eminent men without laying any claim to completeness. To mention only a few, Leibnitz was the sixth of twelve children, Benjamin Franklin was the seventeenth, Frederick the Great the third of fourteen, Napoleon the fourth of twelve, Lamarck the eleventh of twelve, Albrecht von Graefe the fifth, Albrecht Dürer the third of eighteen, Handel the tenth, Mozart the seventh, Richard Wagner the ninth, Franz Schubert and Karl Löwe the twelfth, Werner von Siemens the first of thirteen, Immanuel Kant the fourth of nine, and Luther the first of seven children.

From the Allgemeine Deutsche Biographie, which gives accounts of the lives of 1,600 famous Germans, the remarkable fact was established that 821 out of the 1,600 were brought up in parsonage houses, so that here lies the greatest influence in the progress of German culture. What is the reason? In the first place, the parsonage houses are distinguished by large families of children, so that there is a possibility for noble hereditary traits to be transmitted in great profusion and to lead to good combinations. Furthermore, the children receive a good training, which develops serious-mindedness and a strong sense of duty, so that their talents are directed into right paths. If the children of large families are considered in a group, it is found that 50 per cent of the most famous men are the first, second, third or fourth son; if up to the eighth son is included, the proportion is 75 per cent; if up to the twelfth son is included, the proportion is 90 per cent, while 10 per cent come within the range from the twelfth to the eighteenth son. The figures change somewhat if the small and the large families are considered together. Thirty-two per cent of the eminent men were the first sons, 60 per cent were the first to the fourth, 80 per cent were the first to the eighth, and 92 per cent were the first to the twelfth.

During the discussion that followed the address, Dr. Roessle, medical statistician, called attention to the fact that, in a research on Italian university professors it could not be shown that children born late had an advantage over those born early. It must also be remembered that in former times child mortality was much greater than at present. It is important to know what becomes of the brothers and sisters of the eminent men in order to discover whether certain families are distinguished by their intelligence. The influence of the parsonage house may be due to the fact that in former times the clergy was represented by a larger percentage of university graduates than any other profession. Dr. Hirsch doubted whether there was any biologic law by reason of which the children born later in the family are more likely to become distinguished. Professor Schuster called attention to the researches of Correns on the influence of external factors on the shifting of hereditary phenomena in males. Not only the genotype but also the phenotype is important in the production of genius.

Medicolegal

Trials for Abortion and Practicing Without License

(People v. Johnson (Calif.), 256 Pac. R. 273)

The District Court of Appeal of California, third district, in affirming a judgment of conviction of the defendant of practicing medicine without a license, says that but one ground was urged for a reversal, which was that

> Two indictments were found against appellant by the same grand jury, upon the same date, based upon the testimony of the same witnesses, and upon identically the same facts and circumstances. In other words, the prosecution carved out of the same facts, acts, and circumstances two offenses; the first charge being that of abortion, and the second, practicing medicine without a license. The appellant was tried upon the charge of abortion and acquitted, and was thereby placed once in jeopardy of the charge of practicing medicine without a license; said charge being based upon the same alleged facts, acts, and circumstances.

The defendant did not plead a former acquittal or that he had been once in jeopardy. After the jury had been selected, and after the first witness for the prosecution had been sworn, counsel for the defendant requested the court to excuse the jury temporarily in order that he might present a motion during its absence. On the retirement of the jury, and during its absence, a motion was made for the dismissal of this action against the defendant on the ground that he had been once in jeopardy, in which matter leave was asked to present

the indictment in the former trial of *People* v. *Johnson*, number 4325, wherein the defendant herein was charged with the crime of abortion. Counsel thereupon introduced in evidence the record in the case referred to, including the evidence taken at the trial thereof. The court denied the motion.

The record of the trial in case 4325 was not introduced in evidence at any time during the trial before the jury in this case. Even if the motion to dismiss should be treated as a plea of a former acquittal or that the defendant had been once in jeopardy, it is clear that the jury could not pass on the issue raised thereby without evidence to support the plea. It is also perfectly clear that the offense of practicing medicine without a license is not included in a charge of the crime of abortion, but the two offenses are unrelated to each other. The defendant relied on section 654 of the penal code, which provides:

> An act or omission which is made punishable in different ways by different provisions of this code may be punished under either of such provisions, but in no case can it be punished under more than one.

The defendant confused the criminal act referred to in the section cited with the evidentiary facts tending to prove such act. The fact that the evidence may have been the same in the two cases and that the proof in the former case may have been sufficient to warrant a conviction in the latter did not necessarily establish the claim that the defendant had been once in jeopardy or had been acquitted of the second charge. An acquittal or a conviction on one charge is not a bar to a conviction on another, if the evidence required to support the former is not sufficient to warrant a conviction on the latter without the proof of any additional fact. The test is: Could the defendant have been convicted on the first indictment on proof of the facts, not as brought forward in evidence, but as alleged in the record of the second? The alleged fact that the defendant committed the offense of practicing medicine without a license did not even tend to show that he committed the crime of abortion.

Diagnosis in Connection with Exploratory Operation

(Kimble v. Roeder (Neb.), 214 N. W. R. 1)

The Supreme Court of Nebraska, in reversing a judgment of nonsuit and remanding the cause for further proceedings, says that the action was one to recover $87,600 damages for alleged malpractice. The defendant denied the negligence with which he was charged. Evidence on both sides was adduced at great length. Over 3,600 questions were propounded to witnesses, and the proofs covered more than 700 pages. After the parties rested, the trial court on motion of the defendant excused the jury and dismissed the action.

The plaintiff became suddenly and critically ill, Jan. 20, 1921. Two physicians were called to attend him. They were unable to make a definite or satisfactory diagnosis. Suspecting kidney trouble requiring surgery, the defendant was called into the case as an expert in that branch of the medical profession. At different times cystoscopic examinations of the bladder and kidneys were made by different physicians. In efforts to determine the nature of the disorder, the roentgen ray was used. Specialists in different lines of practice examined the plaintiff and made reports to the defendant, who, by means of an incision, February 19, explored the right side of the plaintiff's abdomen, including the right kidney, without discovering the disturbing cause. The plaintiff remained in a serious condition until June 6, when the two physicians first mentioned, suspecting an abscess in the left kidney, inserted needles without finding pus. They consulted with the defendant, June 7. Fearing an infection in the left kidney, they all agreed that an exploratory operation in that region was necessary. With the assistance of the other two physicians, that operation was performed by the defendant, at a hospital, June 9. The left kidney was exposed for examination and removed.

Negligence in the diagnosis after the left kidney was exposed and in the permanent removal of that organ without sufficient cause were controverted issues in the case. In testing the sufficiency of the evidence for the purpose of reviewing a compulsory nonsuit, the court is committed to the following rule: Where the district court excuses the jury and dismisses the action after admitting proof by each party, the appellate court, in reviewing the decision, will assume the existence of every material fact which the evidence on behalf of the plaintiff establishes or tends to prove and give him the benefit of proper inferences therefrom.

In the present case there was evidence tending to prove that the left kidney, when raised to the surface of the plaintiff's body for examination during the exploratory operation, did not disclose pus visible to the naked eye, and that the defendant failed to require a microscopic examination for indications of infection. There was other evidence tending to prove that the capsule of the kidney and the surrounding tissues did not disclose the presence of pus. There was also testimony, if believed by the jury, sufficient to create the inference that the actual condition of the left kidney and of the surrounding region did not necessitate the removal of that organ, and that the defendant did not exercise ordinary skill and care in making a diagnosis and in removing the kidney after exposing it for examination. The necessity for an exploratory operation implied lack of definite information disclosing the real cause of the plaintiff's abnormal condition and required the usual and ordinary care exercised in making a diagnosis in view of the additional knowledge acquired by the exploration. On this issue the witnesses did not agree. Where the evidence is conflicting on the trial of a controverted issue of fact, the credibility of witnesses and the probative effect of their testimony are questions for the jury. Where the evidence is sufficient to sustain a verdict in favor of the plaintiff on a material issue of fact raised by the pleadings, it is error to excuse the jury and dismiss the action.

In behalf of the defendant it was argued that the three operating physicians and surgeons used their best judgment with full knowledge of the history of the case and of former explorations, examinations, observations, treatments and conditions. Physicians and surgeons performing an exploratory operation resulting in the removal of a kidney cannot, as a matter of law, defeat an action for malpractice by testimony that, possessing ordinary knowledge and skill, they unanimously determined on the course pursued in the exercise of their best judgment, if they did not in fact use ordinary care in making their diagnosing after exposing the kidney and if they were in fact chargeable with negligence in removing it.

There was error in failing to submit issues of fact to the jury.

Itinerant Optometrists—Oculists and Ophthalmologists

(Saunders v. Swann et al. (Tenn.), 292 S. W. R. 458)

The Supreme Court of Tennessee says that this suit was to test the constitutionality of chapter 99, acts of 1925, regulating the practice of optometry. The provision most specifically complained of appeared to be that limiting the practice of any one "itinerant optometrist," as defined in the act, to not more than any three such counties in the state as he may select. This court is not of opinion that this limitation is so unreasonable and arbitrary as to violate the constitution. It applies alone to the itinerant optometrist—to those and to all of those—of that class only, and the classification is therefore unobjectionable. Sound reason can be conceived of as having actuated the general assembly in restricting the licensee to three counties to be selected by any such an itinerant practitioner. On the wisdom and effectiveness of the legislation the courts may not pass. No unjustifiable discrimination is apparent. All who come within the defined term, "itinerant optometrist," are treated alike—accorded the same privileges and subjected to the same restrictions.

Again, this court is of the opinion that the exemptions complained of apply to sufficiently distinctive classes. Oculists and ophthalmologists belong to a distinct class from optometrists. The first has relation to the practice of medicine and surgery in the treatment of diseases of the eye, and the second to the measurement of—fitting of glasses to—the eye. This court thinks that the distinction is quite generally understood, the one being recognized as a learned profession, and the other as an occupation or vocation calling for a degree of mechanical skill and experience.

Improper Nonsuit in Action for Delayed Appendectomy

(Kaminsky v. Sarnoff (N. Y.), 221 N. Y. Supp. 499)

The Supreme Court of New York, appellate division, second department, says that, in this action to recover damages for the death of a child which was alleged to be due to the defendant's negligence, it was error to grant the defendant's motion for a nonsuit at the end of the plaintiff's case in chief. At that time the evidence presented an issue of fact whether the death of the child was caused by the failure of the defendant to perform an appendectomy in time. The answer admitted the employment of the defendant to operate on the child, and the plaintiff's evidence was that the defendant examined the child superficially at about 10:30 a. m. when she was brought to the hospital; that he said she had acute appendicitis, but that her appendix had not ruptured; that she should be operated on immediately; that "every minute means her life." But the evidence was that the defendant left the hospital after making this diagnosis, and did not return until 12:50 p. m., at which time the appendix was found to have ruptured and was discharging pus. The plaintiff's experts testified to their opinion that this delay was a competent cause for the subsequent death of the child from peritonitis or septicemia. It might be that the defendant could explain or contradict this evidence, but it was error to nonsuit the plaintiff. The judgment should be reversed on the law, and a new trial granted; and that was done.

Confession of Epileptic—Not Regarded as Insane

(Maynard v. State (Texas), 293 S. W. R. 1104)

The Court of Criminal Appeals of Texas says that in this homicide case complaint was made of the action of the trial court in permitting the state to introduce in evidence a voluntary confession made by defendant Maynard to the county attorney, and of the action of the court in charging the jury that the burden of proof was on the defendant to show that he was insane at the time of the homicide. It was strenuously insisted that the admission of the confession was erroneous because the defendant was an inmate of the Abilene State Hospital, an institution for the treatment of epileptics, by virtue of a "commitment" issued by a county judge, placing him in custody of the superintendent of the hospital; that, the defendant being insane, he was incapacitated to make a voluntary statement; and that, instead of charging the jury that the burden was on the defendant to establish his insanity, the court should have charged that the burden was on the state to prove the defendant's sanity at the time of the homicide. It was contended that the evidence showed that at the time of the homicide the defendant was in the care of the superintendent of the hospital, and had been for several years; that the act of the county judge in "committing" him to the institution was equivalent to the commitment of lunatics to the insane asylum; and that this case would come under the doctrine announced by this court to the effect that, when it is shown that a lunatic has been tried, convicted and committed to the insane asylum, the burden of proof is on the state, in the event of his subsequent trial for a criminal offense, to show that the accused was sane at the time of the alleged commission of the offense.

It was also contended that articles 3223-3232, inclusive, of the revised civil statutes of Texas of 1925 show that the legislature intended to treat the institution in question as one for the insane, and regarded all epileptics placed therein as being insane subjects. But this court is not in accord with that contention. Article 3224 exempts from the institution idiots and imbeciles, and classifies those eligible to enter it as indigent public patients, nonindigent public patients, and private patients. The record showed that the defendant was classed as a public patient. Articles 3228-3230 embrace all the prerequisites necessary to entitle one suffering from epilepsy to admission to the hospital, and there is nothing in them requiring the applicant to show that he is within the class referred to by the expert testimony in this case as "epileptic insane," and there is nothing requiring the county judge to adjudicate any issue of insanity on the part of the applicant, but the county judge merely ascertains and certifies that the applicant meets the requirements set out in the statutes referred to.

On the other hand, articles 5550-5561, pertaining to lunatics, require a trial before a jury, a finding on special issues, one of which is that the defendant is of unsound mind, and it is necessary that he be placed under restraint, and a judgment entered on said finding, adjudging the defendant of unsound mind, and ordering him to be restrained and given treatment in an insane asylum. Of course, when a judgment of this kind is properly entered, adjudging the defendant insane, and ordering him to be restrained and treated in an asylum, it bears and carries the same verity as any other judgment, and when such a judgment is shown it would devolve on the party attacking it to show by a preponderance of evidence that the defendant, since the date of the judgment, has become sane. There is a wide contrast between a judgment of insanity against a lunatic under the articles cited and the forwarding of an epileptic's application and copy of the proceedings had by the county judge to the superintendent of the epileptic hospital.

This court is of the opinion that the record showed no error in the action of the trial court in admitting the voluntary statement of the defendant in evidence, and in charging that the burden of proof was on the defendant to show that he was insane at the time of the homicide. This issue was for the jury to decide. The state's witnesses, or some of them, testified to the sanity of the defendant at the time of the homicide, while the defendant's witnesses testified, in effect, that he was insane. There was a conviction of murder, and punishment assessed at eight years in the penitentiary, but the judgment of the trial court was reversed and the cause remanded, for improper argument by the district attorney.

Roentgenograms Sufficiently Identified

(Very v. Wilh (Mo.), 293 S. W. R. 500)

The St. Louis (Mo.) Court of Appeals says that in this action to recover damages for personal injuries the plaintiff was permitted to introduce in evidence some roentgenographic plates to prove the existence of certain alleged fractures of bones of his right hand. At the time the plates were offered the defendant objected to their introduction on the ground that they had not been properly identified, the ground of the objection being stated that, though the witness was the plaintiff's physician and had treated his injuries, he had not said that he made these plates. The physician thereupon testified that the plates were made at his request and under his supervision, and that he was present when they were made. There was no objection to the plates except that they had not been made by the witness himself, no objection being offered that they had not been made by trustworthy instruments or by a person skilled in taking the pictures, or that they were not correct representations of the bony structure of the plaintiff's hand. It was sufficient to dispose of the objection as made that the physician testified that he was present when the pictures were taken and that they were made under his own supervision.

Society Proceedings

COMING MEETINGS

Ohio Valley Medical Association, Evansville, Ind., November 9-10. Dr. J. F. Wynn, 712 South 4th Street, Evansville, Ind., Secretary.

Philippine Islands Medical Association, Manila, December 14-17. Dr. A. S. Fernando, College of Medicine, University of the Philippines, Manila, Secretary.

Radiological Society of North America, New Orleans, November 28-December 2. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.

Society of American Bacteriologists, Rochester, N. Y., December 28-30. Dr. J. M. Sherman, Dairy Industry Building, Ithaca, Secretary.

Southern Medical Association, Memphis, Tenn., November 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Augusta, Ga., December 13-15. Dr. R. L. Payne, Medical Arts Building, Norfolk, Va., Secretary.

Western Surgical Association, Omaha, December 8-9. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American J. Diseases of Children, Chicago

34: 327-524 (Sept.) 1927

*Mikulicz's Syndrome. A. J. Schaffer and A. W. Jacobsen, Baltimore.—p. 327.

Anemia in Children: Seven Cases. T. B. Cooley, E. R. Witwer and P. Lee, Detroit.—p. 347.

*Antirachitic Properties of Irradiated Dry Milk. G. C. Supplee and O. D. Dow, Bainbridge, N. Y.—p. 364.

Cirrhosis of Pancreas and Liver in Infant. C. De Lange, Amsterdam, The Netherlands.—p. 372.

*Talipomanus. E. E. Martmer, Detroit.—p. 384.

*Rickets. P. Lewin, Chicago.—p. 388.

Heart and Blood Vessels in Congenital Syphilis. I. Matusoff and P. D. White, Boston.—p. 390.

*Microprecipitation Test for Syphilis. M. G. Peterman, Milwaukee.—p. 404.

*Thrush (Oidial Stomatitis). H. K. Faber and E. B. Clark, San Francisco.—p. 408.

Etiology of Respiratory Disease in City and Country School of New York City. E. M. Lincoln, New York.—p. 418.

*Chvostek's Facialis Sign in New-Born Infants. F. E. Stevenson, A. G. Mitchell and C. A. Koch, Cincinnati.—p. 425.

Gastric Digestion: Relation of Hydrogen Ion Concentration Volume and Buffer Capacity of Gastric Contents to Milk Test Meal. R. B. Miles, Brooklyn, and A. T. Shohl, New Haven, Conn.—p. 439.

Mushroom Poisoning Due to Hebeloma Crustuliniforme: Four Cases. H. W. Price, Baltimore.—p. 441.

Evidence of Rickets Prior to 1650. J. A. Foote, Washington, D. C.—p. 443.

Mikulicz's Sydrome.—Among the ten cases reported by Schaffer and Jacobsen are four of lymphatic leukemia, three children suffering from the acute form and one adult from the chronic form of the disease. All died within from two to eight months after their first visit. One patient had lymphosarcoma, and died three years after the appearance of enlargement of the salivary glands. Another patient suffered from the malady for which Heerfordt coined the term "febris uveo-parotidea subchronica," and recovered completely. The four remaining patients must be classed as having Mikulicz's disease proper, as no definite etiologic agent could be discovered. A classification is suggested in which the cases are divided into two groups: (1) symptomatic and (2) Mikulicz's disease proper. Evidence is presented against the time honored theory of the progression of Mikulicz's disease from the disease proper through pseudoleukemia to leukemia.

Antirachitic Properties of Irradiated Dry Milk.—The favorable results obtained by Supplee and Dow with dry milk irradiated with ultraviolet rays, from the standpoint of laboratory studies, indicate that the nutritive and therapeutic properties of the product are enhanced to an appreciable degree. It appears that the beneficial results known to accrue to food products exposed to ultraviolet rays can be attained without measurable destruction of the readily oxidizable vitamins A and C, provided that a suitable technic of irradiation is used. Critical studies of the product under consideration have shown that there is no evidence of the disagreeable flavor and odor commonly found in milk products that have been exposed to the ultraviolet rays for long periods of time. Furthermore, the usual keeping qualities are apparently unimpaired. The irradiated product has been found to keep satisfactorily and apparently in its original condition for a period of several months. The comparative studies which have been made indicate that the process of activation as applied does not accelerate oxidation of the fatty constituents to a degree that impairs the nutritive value or in any way induces changes of a detrimental character.

Familial Talipomanus.—The three cases reported by Martmer occurred in a mother and her two children. One child had no thumbs, the rest of the hands appearing normal. The left radius was represented by a small bit of bone at the elbow joint. The ulna was markedly bowed. His brother had no thumb on the right hand; there was a total absence of the carpal bones and a bowing of the ulna, associated with a hypoplasia of the radius. .The left hand showed a total absence of the thumb and carpal bones. The radius was slightly shortened but otherwise was not deformed. The mother of these two children showed a total absence of both thumbs; the carpal bones of the right hand could not be palpated, and the radius was represented by a short bit of bone, measuring about 2 inches (5 cm.) at the elbow joint. The ulna was curved in the same manner as the bowing observed in the children. The left hand was intact except for the thumb, but the carpal bone could not be palpated. The radius was shortened, and extended from the elbow joint for about 4 inches (10.16 cm.). The ulna was bowed, although not so markedly as in the other forearm.

New Sign in Rickets.—The roentgenogram in Lewin's case presented the appearance of an epiphysis within an epiphysis. This phenomenon is explained on the basis of a two-stage growth of the epiphysis.

Microprecipitation Test for Syphilis.—A microprecipitation test for syphilis is offered by Peterman because of its simplicity and accuracy. In 500 tests, the reaction was positive in 99.4 per cent of the cases in which syphilis was demonstrated. There were three negative precipitation tests with one plus Wassermann reaction. The Wassermann reaction was positive in 91.6 per cent of the cases in which syphilis was demonstrated. The test may be carried out in the physician's office in less than twenty minutes. The equipment necessary consists of a pipet graduated in 0.001 cc., a hanging drop slide and a thermometer. Beef heart antigen is used. After the serum is inactivated at 56 C. for one-half hour, 0.05 or 0.025 cc. is placed in the concavity of a hanging drop slide; 0.010 or 0.0050 cc. of diluted antigen is added and stirred thoroughly. (For spinal fluid, a higher dilution of antigen is used.) The slide is covered with a glass slide and placed in an incubator at 37 C. for ten minutes. (Incubation produces sharper reactions.) The slide is rotated to mix the solution thoroughly and then read, preferably under a microscope; the results are interpreted, according to the degree of precipitation, as plus one, two, three and four.

Epidemic of Thrush.—An epidemic of thrush in new-born infants is described by Faber and Clark, which developed and spread in spite of apparently active and adequate precautions. The source was traced to accumulations of dust in places difficult of access and invisible to casual inspection. Removal of these accumulations was immediately followed by cessation of the epidemic. Treatment with gentian violet is recommended. Boric acid is without antiseptic value and may be dangerous.

Chvostek's Sign in New-Born Infants.—Fifty-five infants varying in age from 12 hours to 21 days, were examined by Stevenson et al. All had a positive Chvostek sign. The intensity of the sign varied. It was always possible to elicit the sign in sleeping infants, but when the patient was awake, even though quiet, the reaction was frequently negative. In crying or restless infants, the sign was never obtained. Blood calcium determinations were within normal limits in the majority of the infants; in the others, with one exception, the amount of blood calcium was above the limit at which tetany usually occurs. Electrical reactions were obtained in fifteen infants, and in all instances these were normal. As Chvostek's facialis phenomenon is found in new-born infants without clinical, serologic or electrical evidences of tetany, it cannot be regarded as a pathognomonic symptom of this condition in early infancy.

American J. Roentgenol. & Rad. Therapy, New York

103-202 (Aug.) 1927

*Roentgen-Ray Irradiation of Heart in Rheumatic Carditis. R. L. Levy and R. Golden, New York.—p. 103.

II.: Histologic Changes in Sino-Auricular Node and Adjacent Tissues of Dog Following Radium Emanation. M. C. Borman, Montgomery, W. Va.—p. 111.

Roentgen-Ray Diagnosis and Therapy of Thymus in Children. J. Remer and W. W. Belden, New York.—p. 119.

Roentgenography of Spine. J. F. Brailsford, Birmingham, England.—p. 124.
Diagnosis of Pyloric Ulcer. F. Novotný, Brno, Czechoslovakia.—p. 130.
Congenital Hernia of Diaphragm Complicated by Periodic Rotation of Stomach. J. Evans, Baltimore.—p. 133.
Roentgen Rays and Autonomic Nervous System. H. Langer, Pittsburgh.—p. 137.
Measurement of Stray Radiation in Roentgen-Ray Clinics. H. Fricke and I. E. Beasley, Cleveland.—p. 146.
Id.: In New York. L. E. Jacobson, New York.—p. 149.
Causes of Destruction of Cholesterol in Vitro by Roentgen-Ray Irradiation. R. P. MacFate and A. Bache, Chicago.—p. 150.

Roentgen-Ray Irradiation of Rheumatic Heart.—With the idea of attempting to influence rheumatic lesions in the myocardium, twenty patients with rheumatic carditis were given 139 irradiations to the heart. Changes in the form of the electrocardiogram were observed by Levy and Golden in fourteen of the twenty cases. The changes were similar to those sometimes found in the course of rheumatic fever and regarded as due to myocardial involvement. It is suggested that the alterations noted following roentgen-ray irradiation of the heart occurred as a result of the action of the rays on the tissues of the heart with modification of the rheumatic lesions. No changes were observed in the teleroentgenograms which could be ascribed to roentgen-ray irradiation. Of the twenty cases, seventeen showed definite improvement. In eight patients, mildly unpleasant symptoms were noted. In no instance was there any evidence of cardiac injury or an unfavorable effect on the course of the disease. In two cases of streptococcus viridans endocarditis, roentgen-ray irradiation of the heart caused no change in the form of the electrocardiogram nor did it modify the fatal progress of the disease.

American Journal of Syphilis, St. Louis

11: 337-516 (July) 1927

*Therapeutic Value of Hot Baths: Especially in Syphilis. J. F. Schamberg and H. W. Tseng, Philadelphia.—p. 337.
Treatment of Neurosyphilis. J. L. McCartney, Washington, D. C.—p. 398. (To be Cont'd.)
Treatment of Treponematous Ulcers with Bismuto-Yatren. R. P. Parsons, Port au Prince, Haiti.—p. 425.
*Tryparsamide in Acute Syphilitic Meningitis. E. R. Smith, Indianapolis.—p. 432.
Syphilitic Nephritis. E. Hess, Erie, Pa.—p. 438.
Vagary of Syphilis. J. R. McCord, Atlanta, Ga.—p. 443.
*Sulpharsphenamine Poisoning. C. D. Post, Syracuse, N. Y.—p. 444.
*Syphilis Transmitted by Transfusion. I. I. Levy and L. Ginsburg, Baltimore.—p. 447.
Comparison of Kahn, Meinicke, Kolmer-Wassermann and Ruediger-Wassermann Tests. E. H. Ruediger, Hollywood, Calif.—p. 450.
Pitfalls of Wassermann Reaction. R. C. Jamieson and L. W. Shaffer, Detroit.—p. 456.
Antigens in Vernes Flocculation Test for Syphilis. M. A. Lyons and A. B. Baylis, New York.—p. 465.
Standardization of Wassermann Test. R. Gilbert and V. Langworthy, Albany, N. Y.—p. 475.

Value of Hot Baths in Syphilis.—Schamberg and Tseng have proved that it is possible to raise the body temperature by hot baths as high as 106 F., and furthermore to do so safely. In most cases there has been a perceptible improvement in the cutaneous manifestations, sometimes to the point of the disappearance of the lesions. There seems to be a slight improvement in the Wassermann reaction. It is not the expectation that hot baths alone will prove of curative value in syphilis. It is possible, however, that, used as an adjunct to other methods, they may prove to be a therapeutic aid.

Tryparsamide in Syphilitic Meningitis.—A report of the use of tryparsamide in nine cases of acute syphilitic meningitis is submitted by Smith. An arbitrarily chosen lower limit of 400 cells per cubic millimeter in the spinal fluid has been used. Five of the cases can be classed as early, occurring during or soon after the appearance of the secondaries. The other four cases are latent, and the symptoms appeared shortly after head trauma. In all cases a very prompt relief of discomfort was noted after the institution of tryparsamide. Headache and photophobia were absent in a very few days. No untoward results were encountered, and no contraindications were seen in this particular group of cases.

Sulpharsphenamine Poisoning.—Post's patient had consulted a reliable physician for the treatment of syphilis. After a careful examination, 0.3 Gm. of sulpharsphenamine was given intravenously, November 23. This was not attended by any unusual results. The second administration was on December 7. At this time, 0.4 Gm. was given intravenously. The following day toxic symptoms developed. The man died four days later. At the autopsy, extensive hemorrhage and softening in the pons and corpus callosum were found. These were apparently the result of injury to the walls of small blood vessels and capillaries with acute inflammatory reaction, necrosis and thrombosis. Similar changes were present, but less prominent, in the myocardium, endocardium, spleen, cerebral cortex and medulla. No definite evidence of injury to the liver cells or renal epithelium was recognized. The lesions in the brain apparently constitute what has been described by some writers as "hemorrhagic encephalitis" following administration of arsenic in various forms.

Syphilis Transmitted by Transfusion.—Levy and Ginsburg report the case of a man who had a very severe anemia. He was given three transfusions of citrated blood from three donors. The patient soon complained of symptoms which were readily interpreted as being of a syphilitic nature. On investigation, it was found that it was the son who had given his father syphilis when he gave his blood for the transfusion.

American Rev. Tuberculosis, Baltimore

16: 111-244 (Aug.) 1927

*Action of Cough on Material in Tracheobronchial Tract. A. L. Brown, San Francisco, and E. Archibald, Montreal.—p. 111.
*Care of Pulmonary Tuberculosis in Homes. J. H. Pratt, Boston.—p. 123.
*Treatment and Mortality in Arrested Cases of Pulmonary Tuberculosis. J. F. Russell, New York.—p. 145.
Sanatorium Provision in United States for Pregnant Tuberculous Woman. A. M. Hill.—p. 157.
Place of Mental Hygiene in Care of Tuberculosis Patients. R. S. Ahrens, Minneapolis.—p. 171.
*Heliotherapy of Pulmonary Tuberculosis. F. H. Krusen, Philadelphia.—p. 180.
Technic for Selective Collapse in Artificial Pneumothorax. D. Kramer, Silver City, N. M.—p. 191.
*Specific Treatment of Pulmonary Tuberculosis. K. Fischel, Los Angeles.—p. 210.
Treatment of Tuberculosis. E. S. Mariette, Oak Terrace, Minn.—p. 220.
Eradication of Tuberculosis. F. Jessen, Davos, Switzerland.—p. 234.

Physiology of Coughing.—The physiology of the act of coughing is considered by Brown and Archibald. The experimental results of the action of cough on iodized oil, iodized oil-sputum emulsion and thick tenacious sputum, which had been injected intratracheally in cats, are presented. It was observed that cough alone increased the rapidity and degree of the penetration of iodized oil and iodized oil-sputum emulsion, and that this was even more marked when tracheal compression was applied, thus showing an actual "in-driving" action of cough. No similar "in-driving" action of cough on thick tenacious sputum was noted. The relation of cough to certain postoperative pulmonary complications is briefly discussed. It is concluded that cough may tend to drive fluid substances, similar to iodized oil, deeper into the pulmonary tree, and that it is incapable of like action on a heavier substance, such as thick tenacious sputum. Especial attention is drawn to the fact that, whereas the usual action of cough is to expel material from the tracheobronchial tree, it may, under certain conditions, actually bring about the opposite result—that is, drive material deeper.

Care of Pulmonary Tuberculosis in Home.—The results obtained by Pratt in a tuberculosis class over a period of twenty-one years show clearly that adequate medical care is possible in the homes of poor tuberculosis patients by the methods used. Prolonged bed rest in the open air was followed by arrest of the disease and restoration of wage-earning power in 126 of the 312 patients treated. The work had a preventive as well as a curative value, as only two of the eighty-eight children in forty-four families, that were followed from five to twenty-one years, developed clinical tuberculosis in any form.

Dispensary Versus Sanatorium Treatment of Pulmonary Tuberculosis.—A study of the after-history of 121 arrested cases treated at a dispensary leads Russell to stress the fact that dispensary treatment is as successful as sanatorium treatment in bringing about arrest of disease. In addition, it

combines many advantages both for the patient and for the community: the length of treatment is unlimited; the patient's self respect, independence and place in the community and society are preserved; the family is held together; the children are educated and pauperism is prevented, all with the patient's hearty cooperation; instead of a liability, the patient becomes an asset to the community; a much larger number of advanced cases are brought under control and, in consequence, in many so-called incurable cases, the patients become proper subjects for treatment and are able to be self-supporting for years; discharged patients are within reach of supervision, and there is greater economy.

Heliotherapy of Pulmonary Tuberculosis.—Forty patients in the Pennsylvania State Sanatorium at Cresson were given sun treatment for six months. Another group of twenty patients were used as control cases. They were placed under similar conditions, except that they did not receive sun treatment. Krusen believes that heliotherapy, properly administered (preferably by the Rollier method), is of value in pulmonary tuberculosis. The majority of patients like it, and are in a much more cheerful mental state while taking it. Expectoration is apparently easier and slightly increased during the early stage of sun-cure, which stage is followed by a diminution in the amount of sputum, with finally a marked decrease in lung moisture. Cough is slightly increased at the beginning of insolation, and then seems to be permanently diminished. Hemoptysis is not a contraindication to heliotherapy. Patients whose skins pigment well seem to be most benefited by sun therapy. Very far advanced or toxic cases should not receive sun treatment.

Tuberculin Treatment of Pulmonary Tuberculosis.—Fischel regards tuberculin as being a specific, irritating and stimulating therapeutic agent, by which slight allergic reactions can be produced. As such, it ought to have its place among the remedies for the treatment of tuberculosis, and is useful, not as a routine treatment, but in cases selected according to the pathologic-anatomic type and the immunobiologic state.

Annals of Clin. Medicine, Baltimore

5: 1061-1141 (June) 1927

*Arteriosclerosis and Diabetes. E. P. Joslin, Boston.—p. 1061.
Diabetes. C. H. Best, Toronto.—p. 1081.
*Chronic Carbon Monoxide Poisoning. H. G. Beck, Baltimore.—p. 1088.
*Diagnosis of Brain Tumor. C. E. Locke, Cleveland.—p. 1097.
Intracranial Injury During Birth. H. O. Ruh and W. R. Barney, Cleveland.—p. 1112.
Malaria Treatment of General Paralysis. C. W. Stone, Cleveland.—p. 1119.
Nonspecific Diagnosis of Allergic Asthma: Single Intradermal Test. S. M. Feinberg, S. J. Taub and L. Unger, Chicago.—p. 1124.

Arteriosclerosis and Diabetes.—In diabetes, the previous history of obesity, the demonstrated excess of fat and its derivatives in the blood, the high incidence of gallstones all suggest disturbed fat metabolism, and furnish support to the Virchow-Aschoff theory of the development of arteriosclerosis. Joslin is of the opinion that the evidence implies that the increasing incidence of arteriosclerosis in the diabetic patient can be checked, and that the earlier types of arteriosclerosis can be overcome by a diet which provides for the complete oxidation of fat. It is suggested that a diet which contains 100 Gm. of carbohydrate within a few years after the onset of diabetes may prevent premature arteriosclerosis.

Chronic Carbon Monoxide Poisoning.—Beck calls attention to the fact that the condition designated chronic carbon monoxide poisoning is widespread and far more prevalent than is generally supposed, and emphasizes the various clinical phenomena which result from long periods of, or frequent, exposures to mildly toxic or sublethal doses of the gas.

Diagnosis of Brain Tumor.—Locke believes that if every patient complaining of headache were given an ophthalmoscopic examination, brain tumor would much less frequently escape diagnosis. Brain tumors occur more frequently than is usually supposed, and the possibility of their presence should be considered more often in the differential diagnosis of disorders of the central nervous system. In about 20 per cent of the cases of brain tumors, choked disks are not present. The diagnosis of these cases depends on the slowly progressive nature of the localizing signs. In cases in which primary optic atrophy is present without syphilis or multiple sclerosis, the visual field should be examined and a roentgenogram of the sella turcica should be made to ascertain the presence or absence of pituitary tumor.

Arch. Dermatology & Syphilology, Chicago

16: 259-382 (Sept.) 1927

Melanin Pigmentation: Pigmented Dendritic Cells. S. W. Becker, Benton Harbor, Mich.—p. 259.
Nomenclature for Ultraviolet Zones. H. Goodman, New York.—p. 291.
Acarus Scabiei. B. B. Beeson, Chicago.—p. 294.
Granuloma Coccidioides. W. H. Guy and F. M. Jacob, Pittsburgh.—p. 308.
*Inoculation Tuberculosis of Skin Simulating Sporotrichosis. M. S. Wien and T. Cornbleet, Chicago.—p. 312.
Xeroderma and Abnormalities of Skin Texture. P. B. Mumford, Manchester, England.—p. 317.
*Food Allergy in Henoch's Purpura. H. L. Alexander and C. H. Eyermann, St. Louis.—p. 322.

Inoculation Tuberculosis of Sporotrichoid Type.—A case of primary inoculation tuberculosis of sporotrichoid type is presented by Wien and Cornbleet. The case showed metastatic lymphatic invasion closely simulating the clinical picture of sporotrichosis of the localized lymphatic type. The inconspicuous character of the primary lesion, and the centering of the clinical manifestations of the condition about the metastatic lesions, is also shown. The occurrence of a tuberculous osteomyelitis following trauma to another extremity is worthy of mention in this case.

Food Allergy in Henoch's Purpura.—The suggestion is made by Alexander and Eyermann that Henoch's purpura is an expression of food allergy. Two patients apparently became free from symptoms on withdrawal of the offending foods.

Arch. Internal Medicine, Chicago

40: 253-398 (Sept.) 1927

*Lobar Pneumonia. R. L. Cecil, H. S. Baldwin and N. P. Larsen, New York.—p. 253.
*Coronary Circulation. F. M. Smith, Iowa City.—p. 281.
*Basal Metabolism in Vitamin B Starvation. S. Okada, E. Sakurai, T. Ibuki and H. Kabeshima, Tokyo, Japan.—p. 292.
*Exophthalmic Goiter and Involuntary Nervous System: XIII. L. Kessel and H. T. Hyman, New York.—p. 314.
*Blood Groups in Tuberculosis. T. Raphael, O. M. Searle and T. N. Horan, Ann Arbor, Mich.—p. 328.
*Electrocardiograms of Low Voltage. F. A. Willius and W. A. Killins, Rochester, Minn.—p. 332.
Primary Carcinoma of Lungs. B. M. Fried, Boston.—p. 340.
*Changes in Kidney in Animals with Increased Blood Pressures While on High Protein Diets. F. R. Nuzum, Santa Barbara, Calif.—p. 364.
*Yellow Atrophy of Liver. J. D. Wilson and E. W. Goodpasture, Nashville, Tenn.—p. 377.
Pollinosis: Constitutional and Local Factors. W. T. Vaughan, Richmond, Va.—p. 386.

Bacteriology of Lobar Pneumonia.—A bacteriologic classification made by Cecil et al. of 2,000 typed cases of lobar pneumonia showed the following distribution of pathogenic organisms: pneumococcus, 95.65 per cent; hemolytic streptococcus, 3.8 per cent; Friedländer's bacillus, 0.4 per cent; influenza bacillus, 0.05 per cent, and *Staphylococcus aureus*, 0.1 per cent. The incidence of the various types of pneumococcus was as follows: pneumococcus type I, 33.6 per cent; pneumococcus type II, 19.2 per cent; pneumococcus type III, 13.4 per cent; pneumococcus type IV, 33.1 per cent. There was considerable variation from year to year in the incidence of the various types. A study of the mode of termination in pneumococcic pneumonia in which the patients recovered showed that 49.6 per cent terminated by crisis. In type I infections, in which it was most frequent, crisis occurred in 56.6 per cent; in type II, in 50 per cent; in type III, in 39.3 per cent, and in type IV, in 45.5 per cent. The death rates for the various types (without specific treatment) were as follows: type I, 20.7 per cent; type II, 42 per cent; type III, 41.6 per cent; type IV, 29.2 per cent. Types I and IV are the milder forms, types II and III are the severer forms, of pneumococcic pneumonia.

Coronary Circulation.—It is suggested by Smith that the decreased coronary flow associated with the diminished diastolic pressure in aortic regurgitation and arteriovenous

aneurysm is probably a significant factor in the development of the cardiac hypertrophy and later, of cardiac failure. Reduction and acceleration of the cardiac rates within certain limits are associated with definite changes in the rate of coronary flow. The most striking alterations in the coronary circulation were observed during the changes from the slow beat induced by vagal stimulation to the accelerated rate produced by warming the sinus node. A slow cardiac rate comparable to that accompanying complete heart block was produced by vagal stimulation. In each of these experiments there was a striking reduction in the rate of coronary flow.

Basal Metabolism in Vitamin B Starvation.—Okada et al. assert that vitamin B starvation in patients with beriberi causes aggravation of the symptoms and a decrease in the basal metabolism. Administration of a vitamin B preparation ameliorates the symptoms and increases the rate of basal metabolism. Prolonged vitamin B insufficiency in healthy persons causes typical avitaminosis and decrease in the rate of basal metabolism, especially at the beginning of the manifestation of symptoms. Administration of a vitamim B preparation cures the symptoms and increases the rate of basal metabolism.

Exophthalmic Goiter and Involuntary Nervous System.—The course of the subjective and objective manifestations of exophthalmic goiter in fifty unselected patients is discussed by Kessel and Hyman. Of the fifty patients, the spontaneous course was followed in thirty-one; of the nineteen whose spontaneous course could not be completed, six died (a mortality of 12 per cent), and thirteen were either lost from observation or received specific therapy. Of the latter, two received nonoperative therapy, and eight operative therapy; one of the eight died, making an operative mortality in this group of 12.5 per cent. With regard to the spontaneous course, the authors conclude that in considerably more than half the patients, economic and social restitution may be expected after the fourth month and will continue up to at least an average of fifty-seven months, and that this restitution is made in the presence of residual symptoms and despite the stress and strain of the needy in a metropolitan district.

Blood Groups in Tuberculosis.—Four hundred cases of tuberculosis, all but twelve of which were of the pulmonary type, were typed by Raphael et al. It would seem that no specific relationship can be established on the basis of the ordinary standards between blood type and tuberculosis. In corollary, from the standpoint of constitution, if there is any specific relationship between tuberculosis and genotypic physiologic pattern, this does not appear to include the quality of blood type.

Low Voltage Electrocardiograms.—One hundred and forty cases presenting electrocardiograms of low voltage were analyzed by Willius and Killins. This, in their experience, is an incidence of 0.3 per cent. All cases presenting associated abnormalities were excluded. There were forty-five cases (32 per cent) in which cardiac disease predominated. Ninety-five cases (68 per cent) comprised various types of disease. In this group, only seventeen cases revealed evidence of organic heart disease. The cardiac mortality among the group presenting cardiac disease was 30 per cent, whereas the cardiac mortality in the group comprising various diseases was 2 per cent. From the data submitted, it is believed not justifiable to conclude that electrocardiograms of low voltage, unassociated with other graphic abnormalities, indicate serious myocardial disease or are of serious prognostic importance.

Kidney Changes with High Protein Diets.—Kidney changes of a definite type were found by Nuzum in three groups of animals fed on high protein diets for a period of twenty-four months. These changes were not found in a group of animals kept under similar conditions but fed a mixed diet of alfalfa and greens. The urines from the groups fed the liver and oat diets were acid. Albumin and casts were found repeatedly. The nonprotein nitrogen and urea nitrogen of the blood were increased. The carbon dioxide of the blood plasma was decreased. The systolic blood pressures were increased. The urines from the group kept on a soy bean diet were excessively alkaline. Clinical evidences of kidney injury were likewise present.

Yellow Atrophy of Liver.—Cases illustrative of an acute, a subacute and a healed yellow atrophy of the liver are presented by Wilson and Goodpasture. They believe that recovery from acute yellow atrophy is probably more frequent than is generally believed. As the initial lesion of acute yellow atrophy differs in distribution and in extent, if not in kind, from that of the ordinary toxic central necrosis, and as the etiology is not known, it is believed that the term "healed yellow atrophy of the liver" is preferable to the term "toxic cirrhosis," as applied to the condition of the liver which is healed.

Arch. Neurology & Psychiatry, Chicago

18: 323-494 (Sept.) 1927

*Etiology of Infantile Acquired Hemiplegia. F. R. Ford and A. J. Schaffer, Baltimore.—p. 323.
*Thrombosis of Cerebellar and Vertebral Arteries Associated with Intermittent Hiccup. E. C. Rosenow, Rochester, Minn.—p. 348.
Experimental Medullary Concussion of Spinal Cord. A. Ferraro, Washington, D. C.—p. 357.
*Obstruction of Longitudinal Sinus. J. B. Doyle, Rochester, Minn.—p. 374.
Metabolism in Epilepsy: II. Sugar Content of Blood. W. G. Lennox, Boston.—p. 383.
*Id.: III. Blood Sugar Curve. W. G. Lennox, Boston.—p. 395.
Spasmodic Associated Movements of Eyes: Can They Be Produced by Syphilis? G. H. J. Pearson, Philadelphia.—p. 414.
Paroxysmal Spasm of Eyelids as Postencephalitic Manifestation. B. J. Alpers and C. A. Patten, Philadelphia.—p. 427.
Encephalitis with Tumor of Brain. W. Freeman, Washington, D. C.—p. 433.
Herpes Zoster with Paralysis of Abdominal Muscles and Postherpetic Neuralgia. M. G. Masten, Madison, Wis.—p. 437.
Myasthenia Gravis with Ophthalmoplegia and Constitutional Anomalies in Sisters. H. H. Hart, Philadelphia.—p. 439.

Etiology of Infantile Acquired Hemiplegia.—Ford and Schaffer state definitely that the infantile hemiplegias that are associated with the acute infectious diseases are due to vascular lesions. Those which occur early in the course of the illness are, in the majority of cases, due to invasion of the blood stream by the primary organism or by some secondary invader. The palsies that develop during convalescence are the result of the vascular lesions in the cerebral arteries which Wiesel and others have described. These complications are common to all severe infections and are not in any sense specific, although apparently specific changes in the nervous system may be produced by variola, vaccinia, varicella and perhaps by measles and mumps. Final conclusions cannot yet be reached concerning the cause of the hemiplegias that occur in apparently healthy children. The obvious assumption of encephalitis is not supported by anatomic evidence. Only vascular lesions have been found in the few cases in which the fresh lesions have been studied. The vascular changes noted are similar to those which occur during infectious diseases, and may possibly be related to the previous illnesses that these children had suffered.

Thrombosis of Brain Arteries in Hiccup.—Clinical, pathologic and experimental observations are reported by Rosenow in the case of a patient who died of thrombosis of the posterior inferior cerebellar and vertebral arteries at a time when cases of hiccup were occurring in Rochester; in this case, intermittent hiccup was a prominent symptom. The streptococcus isolated from the nasopharynx, the urine and the blood resembled in every respect the one which Rosenow has isolated in cases of epidemic hiccup. In consideration of all the facts, it would seem that this patient's attack of thrombosis of the posterior inferior cerebellar and vertebral arteries, and of intermittent hiccup, and the death consequent thereto, was due to localization in the medulla of the streptococcus of epidemic singultus. Hence, this may be considered a case of complicated epidemic hiccup.

Thrombosis of Longitudinal Sinus.—Four cases of thrombosis of the superior longitudinal sinus are reported by Doyle. In only one case was involvement of the sinus definitely considered; in no case was such a diagnosis made.

Blood Sugar Curve in Epilepsy.—Study of the carbohydrate metabolism in 140 epileptic patients has been made by Lennox by means of 400 blood sugar curves. Of the 140 initial curves, 24 per cent were abnormally high; 6 per cent were abnormally

low, and 70 per cent were within the normal range. About 10 per cent of the patients had high sugar curves which could not be accounted for by coincident disease conditions, and which remained high on repeated examination. These patients probably represent potential diabetes. A larger percentage showed marked variation in the form and level of successive sugar curves or abnormal fluctuations in the renal threshold for sugar. Possible causes of this instability of the sugar regulating mechanism are discussed. The data collected did not give any evidence of abnormality of carbohydrate metabolism that might in itself induce seizures.

Archives of Otolaryngology, Chicago

6: 107-200 (Aug.) 1927

*Utilization of Skin of Upper Eyelid for Repair of Small Facial Defects. J. E. Sheehan, New York.—p. 107.
*Effect of Camphor, Eucalyptol and Menthol on Vascular State of Mucous Membrane. N. Fox, Chicago.—p. 112.
*Malignant Tumors of Nasal Sinuses. H. A. Barnes, Boston.—p. 123.
Physiology of "False" Vocal Cords and Anatomy of Thyro-Arytenoid Muscle and of Thyro-Epiglottic Ligament. E. M. Josephson, New York.—p. 139.
*Chronic Otitis Media in Tuberculous: Local Ultraviolet Light Treatment. F. J. Lussmann and R. A. Bendove, Denver.—p. 153.
Coagulation Test. R. McKinney, Memphis.—p. 158.
Acute and Chronic Otitis Media and Sinus Thrombosis. S. J. Kopetzky, New York.—p. 162.

Use of Upper Eyelid for Repair of Facial Defects.—In a series of forty-eight operations for repairs and corrections of small facial defects, Sheehan made use of grafts taken from the eyelid. Forty-six of these operations were immediately successfull. The prime recommendation of the graft from the eyelid is said to be the assurance that it will "take," a merit it possesses in exceptional degree. A second advantage is that the skin of the lid, if normal in color, matches the skin of the face better than that brought from a distance. Third, the reorganization after healing is so complete that after a few weeks the borders of approximation actually cannot be identified, either at the place of repair or on the lid from which the graft has been taken.

Effect of Camphor, Menthol and Eucalyptol on Nasal Mucosa.—Fox has determined that menthol acts locally as an irritant to the nasal mucosa in dilutions as low as 0.5 per cent. Eucalyptol and camphor have little, if any, local action on the nasal mucosa in percentages up to 5 per cent. The action of menthol is purely local, producing a sensation of patency, owing presumably to the stimulation of the temperature end organs, even though the concomitant resistance to air passages is actually increased.

Malignant Tumors of Nasal Sinuses.—Barnes makes a further report on the results of the wide open operation followed by immediate irradiation for malignant tumors of the nasal sinuses. Of seventeen patients with carcinoma, seven are well and without evidence of recurrence after periods of ten months, fourteen months, fifteen months, four years, five and one-half years, eight years and nine years, respectively (41 per cent). Of eight patients with sarcoma, five are well and without evidence of recurrence after periods of thirteen months, four years, six years, eight years and eight and one-half years, respectively, while one patient was well and without evidence of recurrence at the time of his death by accident, three years after the operation (75 per cent). Of the twenty-five patients treated, the results have been successful in thirteen (52 per cent). Two patients had a successful local result but died of distant metastases. In one of these instances, a case of carcinoma of the ethmoid, death resulted from metastasis to the bodies of the dorsal vertebrae sixteen months after operation; in the other, a case of small round cell sarcoma, death resulted from sarcoma of the liver four years after the operation.

Ultraviolet Irradiation of Chronic Otitis Media.—Lussmann and Bendove have made a study of a series of twenty-five patients with chronic otitis media treated with local ultraviolet irradiation. They conclude that the beneficial effect is derived just as much from the solar rays as from the quartz and mercury vapor lamp, but the modes of application of these two methods differ somewhat, because of the different concentration in the rays. Only six patients failed to improve under this treatment; they gave a history of about ten years' duration of the condition, and had extensively destructive lesions. All other patients showed a marked anatomic improvement, and in seven a functional restoration of the ear was noticed.

Arch. Pathology & Lab. Med., Chicago

4: 155-328 (Aug.) 1927

*Immunologic Studies in Experimental Encephalitis. E. B. McKinley and M. Holden, New York.—p. 155.
*Carcinoma of Breast Combined with Giant Cell Sarcoma. F. C. Helwig, Kansas City, Kan.—p. 162.
*Malignant Sarcoma in Embryonic Tissue Produced by Berkefeld Filtrates of Jensen Sarcoma of Rats. M. T. Burrows, St. Louis.—p. 168.
*Experimental Infarction of Glomeruli in Dogs: Chronic Renal Insufficiency. E. M. Miller and C. W. Apfelbach, Chicago.—p. 193.
*Congenital Sympathicoblastoma of Suprarenal. O. Saphir, Cleveland.—p. 207.
Rapid Method for Silver Impregnation of Reticulum. N. C. Foot and M. C. Ménard, Cincinnati.—p. 211.
Blood Grouping: Practical Applications. L. H. Snyder, Raleigh, N. C.—p. 215.

Experimental Encephalitis.—Confirmation of a previously published method of producing active immunity in rabbits against the herpes virus is presented by McKinley and Holden. Serums from such actively immunized rabbits were found to be virucidal in vitro for the herpes virus. Passive immunity was produced in rabbits with serum from actively immunized animals. Evidence of active herpes immunity produced in sheep is cited, though serums from such sheep do not produce passive immunity in rabbits. Data are presented to show that vaccinia and experimental herpes encephalitis are not related.

Breast Carcinoma with Giant Cell Sarcoma.—A case of carcinoma of the breast showing what was thought to be a sarcomatoid metaplasia is reported by Helwig. The histologic picture was that of carcinoma and giant cell sarcoma. Both types of growth were encountered in the axillary metastasis, and later in recurrent nodules in the postoperative scar.

Experimental Malignant Sarcoma.—In the experiments made by Burrows, sarcomas have developed in animals only when fragments of 15 and 16 day old embryos were treated with a Berkefeld filtrate of an extract of a Jensen sarcoma of rats, and transplanted into the host at once or after a short interval. It was not possible to transplant the Jensen sarcoma to other animals, except when fragments of this tumor were introduced. Extracts of isolated cells of the tumor and filtered extracts did not induce tumors. Tumors developed only in those embryonic fragments treated with the Berkefeld filtrate of the Jensen sarcoma. These fragments, as shown by studies with the tissue culture, suffered a specific increase in cells and a decrease in blood vessels through the stimulating action of this extract.

Experimental Chronic Renal Insufficiency.—A method is described by Miller and Apfelbach of producing chronic renal insufficiency in dogs by complete or partial infarction of glomeruli. It was postulated that the permanent interruption of the circulation through multiple glomerular tufts would initiate the major functional and anatomic alterations of the types of chronic interstitial nephritis under consideration. This interruption of the glomerular circulation was accomplished by the injection of minute particles of charcoal into the renal arteries. Charcoal was used because its location in the kidneys may easily be determined in microscopic preparations; because it is insoluble in body fluids, thus eliminating direct effects on other organs, and because proliferative changes about the charcoal particles were anticipated.

Congenital Sympathicoblastoma of Suprarenal.—Saphir reports a case of primary tumor of the left suprarenal gland with metastasis to the liver. Clinically, the case belongs to the Pepper type of so-called congenital sarcoma. Histologically, the tumor consists of cells similar to those described as nondifferentiated medulloblasts and sympathicoblasts, respectively. Definite neuroblasts or neurofibrillae could not be demonstrated by special stains. A few neuroglia fibers were present, however. The term sympathicoblastoma, therefore, seems appropriate, indicating that most of the tumor cells are nondifferentiated, potential nerve cells.

Arch. Physical Therapy, X-Ray, Radium, Omaha

8: 381-430 (Aug.) 1927

Lymphoid Hyperplasias: Treatment with Roentgen Rays and Ultraviolet Light. I. O. Denman, Toledo, Ohio.—p. 381.

Diathermic Treatment of Medical Kidney Diseases. G. Kolischer, Chicago.—p. 391.

Ultraviolet Radiations in Oral Lesions. F. W. Lake, Boston.—p. 397.

Hydrotherapy in Chronic Disorders. C. E. Stewart, Battle Creek, Mich. —p. 400.

Actinotherapy in Treatment of Infections. W. E. Howell, Chicago.—p. 409.

Roentgenotherapy of Hypertrophied Prostate. A. L. Yocom, Jr., Chariton, Iowa.—p. 416.

Archives of Surgery, Chicago

15: 317-498 (Sept.) 1927

*Pericardiotomy for Pyopericardium. N. Winslow and A. M. Shipley, Baltimore.—p. 317.

*Varicose Veins. B. B. Nicholson, Detroit.—p. 351.

*Roentgen-Ray Treatment of Tuberculous Cervical Lymph Glands. J. M. Hanford, New York.—p. 377.

*Postoperative Hypoglycemia. L. Foshay and D. Boyd, Cleveland.—p. 397.

Anemia Produced by Carcinoma in Colon. W. C. Alvarez, E. S. Judd, W. C. MacCarty and A. R. Zimmermann, Rochester, Minn.—p. 402.

*Portal Cirrhosis with Ascites. W. Hughson, Baltimore.—p. 418.

Invagination Ileus in Polyposis of Small Intestine. R. Brown, Santa Barbara, Calif.—p. 441.

Human Factors in Clinic Management. M. K. Taylor, New York.—p. 443.

Thirty-Third Report of Progress in Orthopedic Surgery. P. D. Wilson, Boston, and others.—p. 478.

Pericardiotomy for Pyopericardium.—The ten patients reported on by Winslow and Shipley were operated on for purulent effusion into the pericardium. Of the ten cases, six, or 60 per cent, were cured, and four, or 40 per cent, terminated fatally.

Varicose Veins.—In the majority of the 112 cases analyzed by Nicholson, heredity seemed to play an important rôle in the development of varices. Pregnancy usually was not a cause for varices, though in certain persons it may have an important secondary influence. Study of the nerve terminals in the venous wall indicates that varices are not ordinarily trophic in origin.

Roentgenotherapy of Tuberculous Lymph Nodes.—Small doses of filtered roentgen rays given by Hanford at intervals of less than three weeks in 141 cases appeared to shorten the course of the disease, and to favor resolution or marked improvement in all stages (except cold abscesses) in a sufficiently large percentage of cases to justify the conclusion that the roentgen ray is useful in the treatment of tuberculous glands of the neck. A definite superiority of small doses of filtered roentgen ray over other single forms of conservative treatment could not be proved, but is supported by these observations. This form of roentgen-ray treatment apparently does not cause undesirable effects not easily avoided. The best results appeared in the treatment of patients who had tuberculous sinuses, of whom 76.8 per cent apparently were cured. Small glands (2 cm. minus) improved more satisfactorily than the large glands (2 cm. plus). Forty per cent of the cystic swellings resolved without incision or spontaneous opening. The cold abscesses all resulted in sinuses.

Postoperative Hypoglycemia.—Foshay and Boyd assert that some of the symptoms and signs of postoperative reactions are caused by a depletion of sugar in the tissues, a cytoglycopenia. They may or may not be associated with a hypoglycemia, if by that term a low whole blood sugar is meant. A method is presented which enables one to gain some insight concerning the amount of dextrose in the tissues by studying the concentration and distribution of dextrose in the blood plasma and erythrocytes.

Portal Cirrhosis with Ascites.—In the series of twenty-six cases reviewed by Hughson, regarded as correctly diagnosed from either operative or autopsy observations or both, it is impossible to conclude that surgical treatment instituted for the purpose of establishing additional collaterals is of the slightest benefit in portal cirrhosis with ascites. Furthermore, from a study of this series, no evidence can be adduced which would indicate that any particular age, sex, race, period of disease or time of appearance of ascites is more favorable for the employment of surgical measures than any other.

Journal of Immunology, Baltimore

14: 85-142 (Aug.) 1927

*Experimental Immunization in Poliomyelitis. W. L. Aycock, Boston, and J. R. Kagan, Burlington, Vt.—p. 85.

Distribution of Immune Agglutinins in Serum and Organs of Rabbits. J. Freund, Philadelphia.—p. 101.

Continuous Injection of Antigen in Sensitized Dogs. W. F. Petersen and E. F. Müller, Chicago.—p. 111.

Cell Penetration by Venom Hemotoxin. P. Kyes and J. H. Bailey, Chicago.—p. 117.

Elimination of Serum Shock. P. Kyes and E. S. Carey, Chicago.—p. 123.

Optimal Dose of Antigen for Wassermann Test. S. B. Hooker, Boston. —p. 129.

Intradermal Test for Virulence of Diphtheria Cultures. C. S. Gibbs and C. Ken, Nanking, China.—p. 137.

Experimental Immunization in Poliomyelitis.—The observations made by Aycock and Kagan lend support to the idea that immunity may be accomplished without active symptoms, and that the neutralization of virus by serum of "normal" persons is an indication of acquired immunity to the virus and is not a property of normal serum.

Journal of Infectious Diseases, Chicago

41: 177-256 (Sept.) 1927

Tissue Hydration: Relation to Susceptibility and Immunity. W. B. Wherry, Cincinnati.—p. 177.

New Spiral Streak Plate Method of Isolating Bacteria by Means of Inoculating Machine. P. L. Varney, St. Louis.—p. 190.

*Is Diabetes of Infectious Origin? E. Gunderson, Oslo, Norway.—p. 197.

Anaerobic Micro-Organisms in Nasopharyngeal Washings: Influenza Studies: XXXI. S. E. Branham, Chicago.—p. 303.

*Toxin-Producing Hemolytic Streptococcus from Septicemia. I. Pilot and R. E. Westlund, Chicago.—p. 208.

Effect of Surface Tension on Growth of Escherichia Coli. W. R. Albus, Washington, D. C.—p. 211.

Effect of Mosaic on Globulin of Potato. M. Dvorak, Fargo, N. D.—p. 215.

Agglutinin Response to B. Abortus Bacterins. S. J. Schilling and W. L. Bleecker, Fayetteville, Ark.—p. 222.

Kahn Test in Experimental Syphilis. J. E. Walker, Washington, D. C. —p. 233.

Gas Production by Bacterial Symbiosis. Influence of Nitrogenous Substances. M. Ishikawa, St. Louis.—p. 238.

Infectious Origin of Diabetes.—Gundersen states that etiologic factors influencing diabetes in the older age group are race, heredity, obesity, arteriosclerosis, nervousness and disturbances of internal organs; in the younger age group infections such as scarlatina, typhoid and epidemic parotitis, with subsequent parotitic pancreatitis, often lead to grave and rapidly fulminating diabetes. Parotitic epidemics in the young age group are followed by a rise in the death rate from grave diabetes in the young age group from three to four years following each successive parotitic epidemic. Atrophy of the testes following parotitic orchitis is similar in nature to atrophy of the pancreas following parotitic pancreatitis. "Acute diabetes" in youth, graver in type and more rapidly fatal than slower and milder development of diabetes in the older age group, is suggested by the author to be infectious in origin and probably caused by the virus producing epidemic parotitis.

Toxin-Producing Streptococcus from Septicemia.—A strain of *Streptococcus hemolyticus* isolated by Pilot and Westlund from the blood of a patient with septicemia produced a toxin which resembled the toxin of streptococci from scarlet fever in skin reactions and in neutralization test with antitoxic serums. Agglutination reactions and absorption tests, however, failed to demonstrate a similar specific relationship.

Journal Lab. & Clin. Med., St. Louis

12: 937-1036 (July) 1927

*Behavior of Bacteriophage in Sugar Mediums. E. Weiss, Chicago.—p. 937.

*Mouse Test to Demonstrate Presence of Type I Pneumococcus in Sputum. R. Gilbert and C. K. Davenport, Albany, N. Y.—p. 944.

*Micro-Kahn Test in Syphilis. R. A. Kilduffe and W. W. Hersohn, Atlantic City, N. J.—p. 946.

Preparation of Potassium and Sodium Tetrabismuth Tartrates. P. A. Kober, Chicago.—p. 962.

*Monilia from Respiratory Tract. F. W. Shaw, Richmond, Va.—p. 968.
*Wassermann Antigen. L. G. Hadjopoulos and R. Burbank, New York. —p. 973.
Duality of Antigenic Nature of Erythrocytes. L. G. Hadjopoulos and R. Burbank, New York.—p. 979.
Local Anesthesia: VI. Para-Amino-Benzoate Compounds. S. J. Cohen, Chicago.—p. 983.
*Bacteriology of Excised Tonsils. R. A. Kilduffe and W. W. Hersohn, Atlantic City, N. J.—p. 988.
*Action of Indole and Skatole on Heart. J. A. Waddell and J. A. Calhoun, Charlottesville, Va.—p. 991.
Universal Artificial Respiration and Closed Anesthesia Machine. D. E. Jackson, Cincinnati.—p. 998.
Gastric Movements in Pigeon. V. T. L. Patterson, Detroit.—p. 1003.
Preparation of Special Liquid Blood Mediums by Filtration. A. J. Salle, Berkeley, Calif.—p. 1009.
Improved Metal Cannula. R. R. Durant, Columbus, Ohio.—p. 1011.

Behavior of Bacteriophage in Sugar Mediums.—Weiss could not confirm the observations of Asheshov and Seiser that the presence of dextrose in the medium hastens the bacteriolysis. Some of his observations agree with those of d'Herelle: (1) nonfermentable sugars have no influence on the bacteriolytic process; (2) the bacteriolysis is not appreciably affected if phage takes place. In almost all instances, Weiss observed regeneration of phage, even if incomplete; the regeneration was very often disturbed by the appearance of resistant bacteria. This fact could be noticed especially when the reaction of the medium became slightly acid as a result of the fermentation of sugar. If the acid, formed by the decomposition of the sugar, was not sufficient to change the reaction of the medium, the regeneration of phage was regular.

Mouse Test for Type I Pneumococcus.—The mouse method for the determination of the type of pneumococcus present in sputum failed to demonstrate the presence of type I in a specimen containing both types I and III according to Gilbert and Davenport. The Krumwiede precipitation test was also negative. After approximately seven hours' incubation, there was sufficient growth in Avery medium inoculated from the first specimen to warrant the performance of a precipitation test. With the aid of an agglutinoscope, a very faint reaction could be detected at the end of half an hour in the tubes containing type I serum, both diluted and undiluted. At the end of one and one-half hours, the precipitate in these tubes was just visible to the unaided eye. No reaction was obtained in the tests with types II and III serums. The patient was definitely benefited by antipneumococcus serum treatment.

Micro-Kahn Test in Syphilis.—A report of 2,116 comparative micro-Kahn and Kolmer tests is presented by Kilduffe and Hersohn, as a result of which it is concluded that the micro-Kahn test is a satisfactory additional method for the serologic study of syphilis. The suitability of the Kahn test as an exclusive method for the serologic study of syphilis is discussed, and the conclusion is reached that it should be used in conjunction with, and not in place of, the Wassermann test.

Monilia from Respiratory Tract.—The monilia described by Shaw differs from *Monilia albicans* in that it does not form a honey-comb growth on dextrose agar; does not coagulate milk, and presents a very different appearance during the development of the moniliform bodies. It differs more markedly from *M. psilosis*. The specific name of richmondi is suggested for this monilia.

Nature of Wassermann Antigen.—Hadjopoulos and Burbank assert that antigens cannot be considered as homogeneous material. They are composed of two serologically dissimilar molecules: (*a*) the immunogenic, i. e., immunity-exciting or antibody-producing fraction, a property residing in the protein molecule, and (*b*) the immunophilic, i. e., the antibody-fixing property residing in the lipin molecule.

Bacteriology of Excised Tonsils.—Kilduffe and Hersohn examined 409 tonsils bacteriologically. The organisms most frequently found were *Staphylococcus aureus*, 33 per cent; *M. catarrhalis*, 34 per cent, and pneumococcus, 54 per cent; organisms not usually associated with those diseases often attributed to focal tonsillar infections. Streptococci were present in only 6.4 per cent.

Action of Indole and Skatole on Heart.—It has been shown by Waddell and Calhoun that indole and skatole are cardiac depressants, their effects being almost identical qualitatively. Indole appeared to be more rapid and more potent in its effects. Both drugs act independently of the nervous apparatus, and hence must be direct muscular depressants.

J. Nervous & Mental Disease, New York

66: 217-328 (Sept.) 1927

Interpretation in Neuropathology. A. E. Taft, Philadelphia.—p. 217.
*Intraventricular Treatment of Paresis. Cestan, Riser and Pérès, Toulouse, France.—p. 227.
Rumination in Relation to Personality Development. P. J. Trentzsch, Culver, Ind.—p. 245.

Intraventricular Treatment of General Paralysis.—Experimental research and clinical observation made by Cestan, Riser and Pérès did not seem to justify the optimism of some observers who had praised the treatment of general paralysis by means of intraventricular injection of drugs. In man, the cerebrospinal fluid fills the meshes of the subarachnoid spaces, fills also the perivascular channels, and penetrates with them into the depth of the nervous tissue. But these perivascular spaces do not themselves communicate with the nerve cells.

Laryngoscope, St. Louis

37: 551-628 (Aug.) 1927

Seeing Sound: Study of Speech and Accurate Graphing of Speech Vibration. M. A. Goldstein, St. Louis.—p. 551.
Osisos Phonoscope for Deaf. J. W. Legg.—p. 602.

Rhode Island Med. Journal, Providence

10: 129-144 (Sept.) 1927

Professional Healers. J. J. Walsh, New York.—p. 129.
Scabies. R. Blosser, Providence.—p. 134.
Sacrococcygeal Tumors: Two Cases. H. E. Utter and R. C. Bates, Providence.—p. 136.

Surgery, Gynecology and Obstetrics, Chicago

45: 257-416 (Sept.) 1927

Diverticula and Duplicature of Duodenum: Importance of Cholecystitis in Production of Symptoms. J. W. Larimore and E. A. Graham, St. Louis.—p. 257.
*Study of Malignant Breast by Whole Section and Key Block Section Methods. J. Fraser, Edinburgh.—p. 266.
*Peritonitis: Experimental Study. V. C. David, Chicago.—p. 287.
Late Recurrence of Peptic Ulcer After Gastro-Enterostomy. L. Davis, Boston.—p. 294.
Spontaneous Perirenal Hematoma and Aneurysm of Renal Artery. K. A. Meyer and H. A. Singer, Chicago.—p. 300.
*Artificial Impaction in Hip Fractures. F. J. Cotton, Boston.—p. 307.
Transitional Cell Epidermoid Carcinoma. D. Quick and M. Cutler, New York.—p. 320.
Cancer of Periampullary Region of Duodenum. I. Cohen and R. Colp, New York.—p. 332.
Nephrectomy. F. Hinman, San Francisco.—p. 347.
Operative Treatment of Obstruction Due to Growth in Descending Colon. J. Schoemaker, The Hague, Holland.—p. 359.
Standard Technic for Operations on Peripheral Nerves. W. W. Babcock, Philadelphia.—p. 364.
Bilateral Resection of Mandible for Prognathism. L. Schultz, Chicago. —p. 379.
*Treatment of Old Infected Compound Fractures of Tibia. L. Thornton, Atlanta, Ga.—p. 385.
Technic of Cautery Amputation of Cervix. H. P. Kohn, Kansas City, Mo.—p. 387.
Traumatic Symphysiotomy. R. J. Willan, Newcastle-upon-Tyne, England.—p. 389.

Classification of Malignant Breast Tumors.—The classification of malignant breast tumors is regarded by Fraser as being unsatisfactory, and the difficulty is increased because several different types of tumor may occur in one breast. Lymphatic dissemination of malignant tumor is by a vertical group of central lymphatics which extend centrifugally in the deep fascia; later, intramammary lymphatics open up. There is no evidence that the subcutaneous lymphatics play a part in the dissemination. Other sources of dissemination are the blood vessels and the duct system. A localized malignant tumor is associated with widespread secondary changes in the duct and in the acinar system, these taking the form of an epithelial proliferation which ultimately becomes malignant.

Studies on Peritonitis.—Evidence is presented by David that colon bacilli pass directly into the blood stream as well

as into the lymphatics from the normal peritoneum. A well developed plastic peritonitis prevents the passage of *Bacillus coli* from the peritoneum into the blood stream or into the lymphatics emptying into the thoracic duct. Lesser grades of peritonitis prevent the passage of *B. coli* into the blood stream but usually do not prevent its passage into the lymphatics. Colon bacilli, injected into the peritoneum which contains a transudate, pass rapidly and in great numbers into the chyle from the thoracic duct and directly into the blood stream. By analogy, it may be assumed that in a well developed general infectious peritonitis, bacteria do not pass directly into the blood stream or into the lymphatics draining into the thoracic duct, and that the major problem in peritonitis does not concern itself with the development of a septicemia.

Artificial Impaction in Hip Fractures.—Cotton produces an artificial impaction by "breaking up" an impaction, then reducing it, and reimpacting with the big mallet. Artificial impaction, useful as it has proved to be, can do no more than give an initial fixation which corresponds to the more favorable types of accidental impaction. It gives no assurance per se of bony union. It has no influence on absorption of bone, or on repair. After artificial impaction, one must fix the limb in the spica and must protect with splints, just as if one were treating the rare case of a satisfactory accidental impaction. But artificial impaction does put the otherwise nearly hopeless loose fracture, or the poorly impacted, badly placed fracture into the most favored class for later treatment.

Treatment of Infected Compound Fractures.—Thornton describes his technic as follows: The infection is first cleared up and the wound allowed to heal. This is accomplished by a sculptural operation very similar to that employed in the treatment of chronic osteomyelitis. After the wound has healed, a brace is worn during that period when latent infection may be present. When this danger has passed, a massive inlay bone graft is made to bridge the bony defect at the site of fracture, and the brace is again worn until union has occurred and the strength of the bone is assured.

Tennessee State Med. Assoc. Journal, Nashville

20: 151-192 (Sept.) 1927

Thyrotoxicosis. S. O. Black, Spartanburg, S. C.—p. 151.
Common Causes of Obscure Ailments. A. J. Willis, Jonesboro.—p. 155.
Our Obstetric Responsibilities. W. W. Holland, Dyersburg.—p. 160.
Urologic Problems of Interest to General Practitioner. G. R. Livermore, Memphis.—p. 163.
Significance of Uterine Hemorrhage. H. M. Tigert, Nashville.—p. 166.
Looking Back Over Forty Years of Practice. C. P. Fox, Greeneville.—p. 170.

Texas State Journal of Medicine, Fort Worth

23: 249-310 (Aug.) 1927

Significance of Infiltration in Lung. C. G. Sutherland, Rochester, Minn.—p. 257.
Time as Important Factor in Successful Treatment and Satisfactory Recovery from Tuberculosis. S. E. Thompson, Kerrville.—p. 262.
*Erythrocyte Sedimentation Rate in Pulmonary Tuberculosis. C. J. Koerth, H. P. Hill and R. G. McCorkle, San Antonio.—p. 265.
High Blood Pressure. R. L. Keller, Dallas.—p. 272.
Bronchoscopic and Esophagoscopic Observations in Tonsillectomies. L. Daily and R. K. Daily, Houston.—p. 277.
Septic Meningitis of Otitic Origin. J. M. Robison, Houston.—p. 282.
Aortic Hypoplasia and Isthmus Stenosis: Case. G. Werley, El Paso.—p. 285.
Therapeutic Value of Ephedrine in Rhinolaryngology. S. Taylor, Austin.—p. 289.

Erythrocyte Sedimentation Rate in Pulmonary Tuberculosis.—Koerth et al. assert that the sedimentation rate test in valuable in estimating the amount of activity in pulmonary tuberculosis, when used in combination with other methods of observation. The rate of fall of the red cells is increased in active pulmonary tuberculosis. The test may be used as a "barometer" in prescribing exercise. It has no diagnostic value in pulmonary tuberculosis. The Morris modification of the Westergren method is the most practical method for clinical use because of its simplicity and the facility of noting the results on a percentage basis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

8: 267-341 (Aug.) 1927

Kinetics of Hemolysis by Lysins of Bacterial Origin: I. E. Ponder and D. G. S. McLachlan.—p. 267.
*Nature of Hyperglycemic Response to Injections of Certain Killed Bacteria. C. L. Evans and I. T. Zeckwer.—p. 280.
*Virulence of Hemolytic Streptococci. E. W. Todd.—p. 289.
*Arterial and Venous Blood Sugars and Respiratory Quotient-Time Curves of Diabetics Following Insulin Administration. I. M. Rabinowitch and E. V. Bazin.—p. 302.
Relation of Hydrogen Ion Concentration to Action of Local Anesthetics. J. W. Trevan and E. Boock.—p. 307.
Properties of Pure Bilirubin: Behavior Toward van den Bergh Reagent. D. T. Davies and E. C. Dodds.—p. 316.
*Effect of Streptococcal Toxin on Bactericidal Power of Human Blood. E. W. Todd.—p. 326.
*Pigment Obtained from Feces. L. F. Hewitt.—p. 333.
Enzootic Encephalomyelitis (Borna Disease). S. Nicolau and I. A. Galloway.—p. 336.

Hyperglycemic Response to Injections of Killed Bacteria.—Evans and Zeckwer assert that the hyperglycemic response of rabbits to killed *B. coli* and *B. proteus* is due to central stimulation of the suprarenals by way of the splanchnic nerves, with consequent glycogenolysis. Ergotamine tartrate prevents this hyperglycemia, insulin neutralizes it. There is suggestive evidence that thyroidectomy decreases the hyperglycemic response to bacteria, and thyroid feeding increases it. In rabbits with one suprarenal removed and the other denervated, the bacterial injection causes a lowering of blood sugar, which may fall to a convulsive level, resulting in death. This hypoglycemia is not likely to be due to central stimulation of the islets through the vagus, because the hypoglycemia occurs after vagal section.

Virulence of Hemolytic Streptococci.—According to Todd, hemolytic streptococci freshly isolated from the blood stream have the power of rapid multiplication in normal human blood and are virulent to mice. Cultivation on agar causes a rapid fall in the power of the cocci to multiply in blood, but this lost characteristic can be restored by cultivation in normal human serum. After more prolonged cultivation on agar the cocci pass into a state in which cultivation in serum does not restore the power of multiplication in blood. Virulence is not dependent on the production of soluble toxin.

Effect of Insulin on Blood Sugar and Respiratory Quotient.—In a series of ten patients, eight of whom had severe diabetes, who were unable to store dextrose and had low respiratory quotients in the fasting state, the first effect noted by Rabinowitch and Bazin after the administration of insulin was storage and not oxidation of dextrose. In the two cases in which oxidation was the first phenomenon noted, the arterial and venous blood sugars were identical, and these cases, therefore were probably not as severe as the others. A reasonable assumption is that these two subjects had sufficient glycogen stored, and were therefore able to oxidize it. The evidence obtained here, therefore, supports the view that glycogen formation is a necessary preliminary to oxidation of carbohydrates.

Effect of Streptococcal Toxin on Bactericidal Power of Blood.—Todd asserts that streptococcal toxin has a slight but definite toxic action on the bactericidal power of blood in vitro, and this effect can be neutralized by antitoxin. Streptococcal filtrates capable of producing a positive Dick reaction are slightly toxic to blood in vitro. Filtrates from hemolytic streptococci which do not give rise to a positive Dick test are not toxic to blood.

Pigment Obtained from Feces.—The preparation, properties and probable constitution of a brilliant red pigment obtained from feces are described by Hewitt. It is suggested that the pigment is a dye of the diphenylmethane type derived from some pyrrole derivative, e. g., skatole, in the feces. The pyrrole compound condenses in the presence of alcoholic hydrochloric acid with a minute amount of aldehyde present as impurity in the alcohol or formed therefrom by oxidation, giving the chromogen, which when heated in the air is oxidized to the pigment. It was found that, if skatole is

heated on a water bath with alcoholic hydrochloric acid containing a trace of acetaldehyde, a brilliant red pigment, destroyed by alkalis, was obtained.

British Journal of Radiology, London

32: 275-308 (Aug.) 1927

*Deep Roentgen-Ray Treatment of Malignant Cases. M. R. J. Hayes.—p. 275.
Growth of Tumor in Tissues Exposed to Roentgen Rays and Radium. S. Russ and G. M. Scott.—p. 289.
Syphilis of Stomach. C. Herman.—p. 296.
Accident with Tube Stand. W. E. Jones.—p. 303.

Deep Roentgenotherapy of Malignancies.—Hayes reports his experiences with the treatment of 180 cases of malignant and nonmalignant tumors by deep roentgenotherapy. Among the malignant group were carcinomas of the breast, mouth, tongue, rectum, thyroid, uterus, prostate and bladder and sarcoma of the lung and of the bones. On the whole, the results were very gratifying, indicating that the treatment has merit.

British Medical Journal, London

2: 291-332 (Aug. 20) 1927

Structure and Function of Spleen. J. Tait.—p. 291.
Kinetics of Various Hemolytic Systems. E. Ponder.—p. 295.
*Bismuth Treatment of Syphilis. D. Lees.—p. 298.
Employment of "Polar-Body" Developing Strains of Gonococcus in Treatment of Gonococcal Infection. E. C. Lambkin and L. Dimond.—p. 302.
World Epidemics: Relationship to Social Conditions. G. M. Cullen.—p. 305.
Treatment of Varicose Veins by Injection. F. A. Hepworth.—p. 307.
Acute Appendicitis in Infant. S. Pope.—p. 307.
Sympathetic System in Miners' Nystagmus. R. S. Brock.—p. 308.
Coins in Esophagus. T. S. Evans.—p. 308.

Bismuth Treatment of Syphilis.—Lees avers that bismuth is an active antisyphilitic drug, more rapid in its destructive action on *Spirochaeta pallida* in vivo than mercury; it is not so rapid as the arsphenamine group of drugs in this respect. Bismuth influences the surface lesions of syphilis as rapidly as the arsphenamines, and more rapidly than mercury. The combined administration of bismuth and arsenic is more potent than either drug alone and is free from danger if given in therapeutic doses. The same holds good of arsenic and mercury. The administration of metallic bismuth in isotonic dextrose solution is remarkably free from pain and side-effects, and in this respect is better tolerated than either arsenic or mercury. Bismuth is a very valuable drug in cases of syphilis which are intolerant to treatment by arsenic or mercury and in the treatment of any patient who has advanced organic disease, whether the latter is due to, or is intercurrent with, the syphilis. The intramuscular injection of an insoluble compound of bismuth gives better therapeutic results with less risk of toxic effects than other methods of administering it, such as the intravenous administration of colloidal bismuth or the intramuscular injection of the salts of bismuth. The addition of bismuth and its salts to the other available methods of treatment does not as yet justify any one in lessening the length of time over which every case of syphilis should be treated and kept under observation. Apart from cases of intolerance to other drugs, bismuth is only an adjuvant to the treatment of syphilis and should not be used alone, even in the very earliest cases of infection.

Edinburgh Medical Journal

34: 445-504 (Aug.) 1927

Radium in Cancer. A. B. Smith and S. M. Smith.—p. 445.
*Investigation into Outbreak of Infectious Jaundice. T. J. Mackie and D. G. S. McLachlan.—p. 456.
Osteomyelitis of Long Bones in Infant with Inherited Syphilis. J. Thomson.—p. 466.
Spinal Anesthesia in Postoperative and Other Forms of Ileus. D. M. Greig.—p. 470.

Infectious Jaundice.—Mackie and McLachlan report on an outbreak of jaundice of undoubted infectious nature occurring in young persons only and showing a familial incidence (seven cases in two families). The illness was of exceedingly mild type, but the results of bacteriologic examination pointed to its spirochetal origin.

Indian Medical Record, Calcutta

47: 193-224 (July) 1927

*Rôle of Akta in Causation of Lathyrism. G. Mukerjee.—p. 193.
Radium Therapy in India. A. P. Som.—p. 197.

Rôle of Akta in Causation of Lathyrism.—An examination made by Mukerjee of the weeds contaminating Khesari has proved that akta (*Vicia sativa* var angustifolia) contains bases showing alkaloidal properties. Two such bases—vicine and devicine, and a cyanogenetic glucoside, vicianin, have been isolated, prepared in the pure state, and used in inoculation experiments on animals. Devicine, which occurs in akta in combination with sugar as the glucose vicine, produces on inoculation in guinea-pigs a characteristic and fatal disease. Akta, when fed to ducks, causes death. In monkeys, it produces a very characteristic train of symptoms affecting the nervous and muscular symptoms. Though certain of the symptoms occurring in monkeys fed on diets containing akta have been described in cases of lathyrism, Mukerjee is not ready to state that akta is the cause of lathyrism in man.

Journal of Physiology, London

63: 201-308 (Aug. 8) 1927

*Vasodilator Action of Epinephrine. H. H. Dale and A. N. Richards.—p. 201.
*Action of Histamine on Blood Vessels. W. Feldberg.—p. 211.
*Visceral Sensation: I. Relation of Pain to Activity in Human Esophagus. W. W. Payne and E. P. Poulton.—p. 217.
Action of Insulin on Aseptically Perfused Heart. R. Bodo and H. P. Marks.—p. 242.
*Study of Capillaries in Web of Brown Frog (R. Temporaria) when Perfused with Solutions Containing Pituitary Extract and Horse Serum. C. K. Drinker.—p. 249.
Variation in Unit of Estrus-Producing Hormone. K. H. Coward and J. H. Burn.—p. 270.
Nerve Metabolism: I. Influence of Oxygen Lack on Heat Production and Action Current. R. W. Gerard.—p. 280.
*Relationship Between Volume of Heart and Its Oxygen Usage. A. Hemingway and A. R. Fee.—p. 299.
Circulation of Body Fluids in Frog. E. D. Churchill, F. Nakazawa and C. K. Drinker.—p. 304.

Vasodilator Action of Epinephrine.—Dale and Richards assert that the vasodilator action of epinephrine in the carnivora, like its vasoconstrictor effects in all species, is due to a peripheral action.

Action of Histamine on Blood Vessels.—The observations made by Feldberg support the assumption, made to explain the varying effects on the arterial pressure, that histamine has a dual action on the vessels—a constrictor effect on the visible arterial branches, and a more peripheral dilator effect, spreading on to the capillaries. Only with large doses of histamine does arterial constriction complicate the vascular effect in this species. Only under quite abnormal conditions can it be supposed that sufficient histamine would escape into the general circulation to affect the arteries directly.

Visceral Sensation.—Bayliss and Starling's law of the intestine or myenteric reflex has been demonstrated by Payne and Poulton in the lower end of the esophagus and applied to esophageal peristalsis. Esophageal waves resulting from swallowing, secondary swallowing and secondary peristalsis are described. Tonus in plain muscle has been defined as the tension of the muscle during diastole. Pain produced experimentally is associated with high tonus. As the result of kymographic and radiographic examination of the normal esophagus it is suggested that visceral pain results from a stretching force in the viscus and is caused by stretching the deformity of the pain endings in the wall. It is relieved by a peristaltic contraction that overcomes the stretch, or by postural adaptation which increases the capacity of the viscus. It is made worse by a peristaltic contraction which is unable to overcome the stretch, and which is consequently held up in its course. The latter causes painful spasm. Burning pain results from a continuous stretching and deformity of pain endings. When relieved periodically by successive peristaltic waves it becomes griping in character. Pain is especially apt to occur during the muscular relaxation that follows a peristaltic wave. Visceral pain, experimentally produced, if prolonged and severe is followed by cutaneous hyperesthesia and other signs of referred pain, and may produce unpleasant results later.

Study of Capillaries in Web of Frog's Foot.—A new method for perfusing the foot of the frog through the anterior tibial artery is described by Drinker. This method permits the measurement of total rates of flow, of the onset of edema, of flow in the capillaries, and of capillary diameter, the last two measurements depending on the employment of perfusates containing colloidal graphite. The procedures described can be carried through in different animals with a degree of uniformity and control that permits the use of the method for systematic studies on capillary dilatation and edema.

Relation Between Heart Volume and Oxygen Usage.—The oxygen consumption of the whole heart bears a direct linear relationship to its diastolic volume. A method of determining the oxygen consumption of an isolated organ perfused by a heart-lung preparation is described. An improved type of cardiometer is also described by Hemingway and Fee.

Lancet, London

2: 367-418 (Aug. 20) 1927

*Treatment of Genital Tuberculosis in Male. K. M. Walker.—p. 367.
*Streptococcal Pityriasis. H. Haxthausen.—p. 370.
*Induction of Respiration in New-Born. A. L. McIlroy.—p. 373.
*Treatment of Jensen's Rat Sarcoma by Antiserum and Epinephrine. T. Lumsden and J. G. Stephens.—p. 375.
Comparative Lability of Antiserums Cytotoxic to Cancer Cells. A. C. Kohn-Speyer.—p. 377.
*Preventive Treatment of Syphilis. H. D. L. Spence.—p. 379.
Functional Paralysis of Legs Following Labor. M. Salmond.—p. 379.

Treatment of Genital Tuberculosis in Male.—Walker emphasizes the fact that although the treatment of genital tuberculosis is not an isolated unit that can be dealt with entirely by operation, it must be regarded as a local manifestation of a general condition requiring the adoption of all general and local measures known to be of value in raising the resistance against the tuberculous invasion. He is of the opinion that epididymectomy is the operation which is most generally useful. Vesiculectomy, although it is based on a correct understanding of the nature of the disease, is rarely necessary, since removal of the lesions in the testes is usually followed by marked regression of those in the prostate and vesicles. This regression is materially assisted if to epididymectomy are added other methods of treatment—climatic, dietetic, and the use of heliotherapy, roentgen rays and tuberculin. If an improvement in the central lesions does not occur, then vesiculectomy and removal of grossly infected tissue in the prostate should be carried out as a secondary measure. In advanced cases of tuberculous vesiculitis and prostatitis, and where fistulous tracts exist, the radical operation should be performed as a primary measure. Possibly it may also be carried out in a few cases of less advanced disease when the mode of life and environment of the patient is so unfavorable that from the outset he is severely handicapped in the fight against the tuberculous invasion.

Streptococcal Pityriasis.—Haxthausen proposed the name pityriasis streptogenes in place of Sabouraud's "impetigo sicca" or Adamson's "chronic impetigo" because the disease is secondary to impetigo in only a small number of cases, while the majority—all those cases classed by most writers as seborrheal eczema—occur primarily as a pityriasis and preserve this appearance in their future course. Whether the streptococci found in pityriasis are impetigo streptococci whose virulence is merely diminished, or whether they are a special type, future serologic research must decide. But, in any case, indications are that these streptococci are the cause of the disease.

Induction of Respiration in New-Born.—McIlroy advocates the administration of 5 per cent carbon dioxide and 95 per cent oxygen in this case. The apparatus devised for the use of this mixture is described and pictured. The mixture is said to be of value also in cases of cardiac and respiratory failure under anesthesia.

Treatment of Rat Sarcoma with Antiserum and Epinephrine.—Lumsden and Stephens assert that sarcoma (J. R. S.) of the flank in rats of various ages can be caused to regress in about 50 per cent of cases by injecting antiserum and epinephrine into and around the tumor. After such regression the rats are immune to reinoculations of this tumor and also to inoculations of the rat cancer R. IX. Cross-immunity in the opposite direction is much less usual. Epinephrine diluted with physiologic sodium chloride solution and especially epinephrine diluted with normal heterologous serum has a definitely curative effect.

Preventive Treatment of Syphilis.—Spence advocates the intravenous injection of 0.6 Gm. of neoarsphenamine within a day or two after exposure. Perfect results are reported.

Japan Medical World, Tokyo

7: 161-189 (June 15) 1927

*Etiology of Typhus Fever: III. S. Kusama, H. Tsuchiya and G. Nakajo.—p. 161.
*Finger Prints According to Race. T. Furuhata.—p. 162.
Artificial Production of Neoplastic Proliferation in Oviduct Epithelium. U. Kakiki.—p. 165.

Serum Therapy of Typhus.—An immune serum, which was obtained by Kusama et al. by immunizing a horse with typhus bacillus as the antigen, proved to have prophylactic and therapeutic efficacies against experimental typhus fever.

Finger Prints According to Race.—Finger prints are divided into three classes; i. e., arches, loops and whorls. On investigation of these three kinds of finger print, Furuhata says it may be learned that the rate of their distribution in the races belonging to the same group is almost definite. He believes that in time a complete classification of races, based on the study of heredity as well as the mathematical investigation, will be given out, taking all kinds of finger prints into consideration. By the finger print indexes, the races of the world may roughly be classified as follows: the Manchurian type; the Japanese type; the Italian type; the Indian type and the West European.

Okayama Medical Journal, Okayama, Japan

450: 941-1088 (July) 1927

*Blood Platelets. S. Otsuka.—p. 941.
Difference Between Small and Large Intestine: Their Reaction to Nerve-Muscle Poisons. Y. Takahashi.—p. 996.
Relations of Liver Glycogen in Embryonal and New-Born Status. I. Maruyama.—p. 1011.
Rapidity of Blood Sedimentation and Fibrin Content of Blood. A. Fujiwara.—p. 1030.
Isolated Bacterial Agglutinins. G. Sunouchi.—p. 1039.
Spleen and Carbohydrate Metabolism: Lactic Acid Content of Blood. A. Noma.—p. 1048.
*Cell Inclusions in Herpes Simplex and H. Zoster. I. Ehara.—p. 1058.
Communicating Tracts of Corpus Mamillare: Fasciculus Mamillotegmentalis. K. Yamagata.—p. 1072.
Diagnosis of Duodenal Ulcer by Means of Duodenal Sound. K. Kitayama, S. Sasai and H. Kawaguchi.—p. 1084.

Study of Blood Platelets.—Otsuka found that removal, as well as irradiation, of the spleen with roentgen rays increased the number of blood platelets for a two weeks period, with a gradual decline to normal. Following injection of india ink there is a similar increase but a sudden drop to normal. The spleen, then, not only destroys blood platelets but also is concerned in their formation, whether as a hindrance or an aid has not been determined.

Cell Inclusions in Herpes.—Ehara believes that these cell inclusions do not bear any etiologic relationship to these lesions, but represent a pathologic reaction.

Sei-I-Kwai Med. Journal, Tokyo

46: 1-18 (July) 1927

*Pentastoma Nodules in Liver. K. Sonobe.—p. 1.
Staircase Phenomenon of Isolated Toad's Heart. M. Tamura.—p. 14.
*Morphologic Changes of Erythrocytes Due to Malaria Plasmodium: Schuffner's Granules. M. Yoshino.—p. 15.
Phenolsulphonphthalein Excretion of Unilaterally Nephrectomized Rabbit. K. Kawai.—p. 16.
Blood and Urinary Constituents of Unilaterally Nephrectomized Rabbit. K. Kawai.—p. 17.

Pentastoma Infestation of Liver.—Among 500 bodies Sonobe found sixteen cases of infestation of the liver with *Linguatula rhinaria (Pentastoma denticulatum)*. The calcified remains of this organism were encapsulated. The author does not regard the organism as possessing any pathologic interest.

Schuffner's Granules in Malaria.—Yoshino found Schuffner's granules only in tertian malaria, never in quartan or quotidian. He failed to find any Maurer's granules.

Archives Franco-Belges de Chirurgie, Brussels

29: 1041-1134 (Dec.) 1926

*New Procedure in Treatment of Severe Scoliosis. Hendrix.—p. 1041.
Traumatic "Malacia" of Semilunar Bone: Kienböck's Disease. Pigeon and Loustric.—p. 1051.
Subluxation of Knee by Torsion. L. Moreau.—p. 1068.
Two Causes of Acute Intestinal Occlusion. L. Moreau.—p. 1071.

New Procedure in Treatment of Severe Scoliosis.—For treating scoliosis Hendrix proposes the use of a shell made by impregnating burlap with plaster, and reinforcing with rods. It is molded while the patient, according to the directions of the orthopedist, is lying in the position most favorable to correction of the torsion of the spine. The patient spends a part of each day immobilized in this shell.

Archives des Maladies du Coeur, etc., Paris

20: 513-576 (Aug.) 1927

Angina Pectoris Treated Surgically. R. Leriche and R. Fontaine.—p. 513.
Nature of Extra-Systoles. K. F. Michailoff and M. L. Solitermann.—p. 540.
*Methylene Blue Reinforcement of Microscopic Preparations. J. Sabrazès.—p. 551.

Methylene Blue as Reinforcement of Slide Preparations of Blood, etc.—This method of staining with methylene blue in 1:500 aqueous solution in small drops, under coverglass and on smears dried rapidly on slides, is good for reinforcing, freshening and regenerating Leishman, Wright, May-Giemsa, Tribondeau and other preparations, whether they be new but bad for various reasons or old and more or less faded.

Bull. de la Societé Médicale des Hôpitaux, Paris

43: 1195-1250 (July 28) 1927

Treatment of Pernicious Anemia. G. Hayem.—p. 1195.
Tuberculous Ulcerations of Skin Treated with Vaudremer's Vaccine. A. Sézary and F. Benoist.—p. 1196.
Spondylitis Typhosa Cured by Vaccinotherapy. Le Noir and R. Liège.—p. 1200.
*Systolic Murmur in Infraclavicular Space in Diagnosis of Incomplete Arteritis Obliterans of Subclavian. C. Lian et al.—p. 1201.
Paroxysmal Hypertension Cured by Radiotherapy of Suprarenal Region. C. Laubry.—p. 1216.
Anterior Lateral Cordotomy in Paroxysmal Stump Pain. Sicard et al.—p. 1219.
Radiosensitive Pleuropulmonary Tumor Simulating Pleural Effusion. P. Ameuille and M. Tacquet.—p. 1221.
Cancer of Lung with Bone and Other Metastases. M. Loeper and R. Garcin.—p. 1225.
Alveolar Echinococcosis of Liver. M. Loeper and R. Garcin.—p. 1230.
Plea for Examination of Pure Blood. G. Hayem.—p. 1238.
Streptococcic Septicemia with Primary Joint Localizations. P. Le Noir and R. Liège.—p. 1243.
"Perfringens" Septicemia of Buccodental Origin. G. Caussade and L. Gluck.—p. 1244.

Systolic Murmur in Infraclavicular Space in Diagnosis of Incomplete Arteritis Obliterans of Subclavian.—Eight cases are reported. These show the importance of systematically auscultating the infraclavicular spaces in all cases in which one hears a murmur at the base of the heart, no matter how slight, as well as all those cases in which there is found an inequality of the pulse, of the maximal arterial pressure, or of the oscillometric index in the upper limbs. Thus one will not infrequently be led to the diagnosis of incomplete arteritis obliterans of a subclavian, and perhaps to the tracing of syphilis in the patient. Examination for the systolic murmur of the infraclavicular space is an easy way to avoid errors in the diagnosis of arterial hypotension.

Gynécologie et Obstétrique, Paris

15: 401-476 (June) 1927

High Forceps. Brindeau and Lantuéjoul.—p. 404.
*Unilateral Salpingitis. E. Desmarest and D. Cvitanovitch.—p. 409.
Tubal Endometritis. E. Hammer and J. A. Van Dongen.—p. 414.
Causes of Abortion Residing in Ovum. J. Rhenter and H. Pigeaud.—p. 422.
Blood Platelets and Prognosis of Septic Puerperal Diseases. S. Téoumine.—p. 436.

Unilateral Salpingitis.—Among 155 cases of salpingitis operated on by them, Desmarest and Cvitanovitch were able to find only seven (4 per cent) in which the tube and ovary of the side opposite the lesion were intact. One of these seven is described. The authors are of the opinion that unilateral salpingitis is much rarer than has been supposed. Generally, it appears under the form of a suppurative salpingitis or ovaritis, after a postabortal infection. In this case the differential diagnosis from hematocele is based on the anamnesis and mainly on the leukocytosis. In salpingitis of slow development, bilaterality is the rule. In these cases the lesions of one side may be minimal in comparison with those of the other, but bilateral lesions always exist. Tuberculous salpingitis is always bilateral.

Médecine, Paris

8: 725-800 (July) 1927

Nutritional Diseases, 1926-1927. E. Azérad.—p. 725.
Normal and Pathologic Glycemias. M. Labbé and F. Nepveux.—p. 728.
Dercum's Disease. M. Labbé and R. Boulin.—p. 737.
Infections in Diabetics. H. Bith.—p. 739.
Physiopathogenesis of Infantile Tetany. R. Turpin.—p. 744.
Conditions Accompanied by Hyperalkalosis of Blood. R. Turpin.—p. 750.
*Temperature of Skin. A. Seligman.—p. 752.
*Value of Azotemic Ratio. F. Nepveux and A. Hiernaux.—p. 757.
Cutaneous Test of Fluid Adsorption. E. Azérad.—p. 762.
Treatment of Renal Lithiasis. M. Labbé.—p. 767.
Treatment of Chronic Dysenteries. F. Moutier.—p. 776.
Intestinal Helminthiasis. A. Escalier.—p. 787.

Temperature of Skin.—Seligman found the thermo-electric needle of Becquerel and Breschet a satisfactory instrument for obtaining the normal temperature of a subject. All external influences must be eliminated, the observation being made after the subject has spent some time in bed, well protected by covering. Under these conditions, in a room at 15 C., the average temperature was remarkably uniform, from 32.9 to 34.1 C. in twelve girls, aged 14 years. The different parts of the body are not isothermic, the temperature at the waist usually being about five degrees higher than that on the sole of the foot. Protection by clothing being better assured in man than in woman, the cutaneous temperature is lower in woman. There is some means of thermic regulation which diminishes the loss of heat in woman and makes it equal to that of man. In subjects exposed naked to a temperature of 20 C., the extremities cool after a few seconds; at the end of three hours the temperature of the trunk is 30 C.; that of the foot, 23 C.

Value of Azotemic Ratio.—In Bright's disease with azotemia, the ratio of urea nitrogen to total nitrogen is increased in proportion to the amount of urea which constitutes the nitrogen retained in excess. In patients suffering from hepatic disease, in diabetics with nitrogenous denutrition, the amount of urea diminishes, that of nonureal substance increases, causing a lowering of the azotemic ratio. The azotemic ratio may indicate the gravity of a pathologic condition and help to establish the prognosis.

Paris Médical

64: 37-48 (July 9) 1927

*Autovaccination Treatment of Typhlocolitis. Gaehlinger.—p. 37.
Recent Progress in Vaccines and Vaccinotherapy. Ralli.—p. 41.
Simultaneous Cancers of Cardia and Pylorus. Dieulafé.—p. 45.
*Treatment of Ozena. P. Harvier.—p. 47.

Treatment of Typhlocolitis by Autovaccination by Buccal Route.—Gaehlinger has for four years used vaccination by the buccal route in the treatment of intestinal infections. Excellent results were obtained with an autovaccine bouillon, which had been growing eight days. If used in treating typhlocolitis, the fever falls and pains disappear in a few days.

Modern Treatment of Ozena.—The paradiphtheria bacillus, discovered by Belfanti and Della Vedova in 1896, is constantly found in the secretions of patients with ozena. This bacillus resembles the true diphtheria bacillus in every way, except that it is lacking in virulence for the guinea-pig. Patients suffering from ozena may be treated by intramuscular injections of diphtheria anatoxin, the dose for the first day being 0.5 cc. Two days later an injection of 2 cc. may be given. The third and later injections of 4 cc. are given twice a week for two months. After a rest period of a month,

another series may be given. Results with diphtheria anatoxin are obtained more rapidly and are more durable than those with vaccines prepared from the Belfanti bacillus.

64: 73-84 (July 23) 1927

*Retraction of Testicle with Increased Cremasteric Reflex. André-Thomas. —p. 73.
New Functional Test of Liver. A. Kleinknecht and C. Dreyfus.—p. 81.
Scarlatinal Rheumatism Developing with Simple Endocarditis. E. Boltanski.—p. 83.

Retraction of Testicle with Increased Cremasteric Reflex.—André-Thomas reports two cases of ascent of the testicle with increased reflex of the corresponding cremaster. Since examination of the nervous system was otherwise negative, the significance of the slight weakness of the left side, which the patient felt for the first few days, is difficult to explain. The hypothesis of slight damage to the central nervous system cannot be excluded. If there is a connection between the neurasthenic depression and the cremasteric reflex—their simultaneous appearance might suggest this—it is impossible to identify it. In the first patient, neurasthenia is at present much diminished, while the cremasteric syndrome persists; hence, the latter does not depend exclusively on the former.

35: 961-968 (Aug. 3) 1927

*Serotherapy of Human Anthrax. E. Bodin.—p. 961.
Combined Sugar of Blood. L. Condorelli-Aide.—p. 962.
Aquatic Animal Life. P. Desfosses.—p. 965.

Serotherapy of Human Anthrax.—Of Bodin's five cases of anthrax, four were in tanners handling skins from China and Madagascar. He recommends that every workman handling skins of foreign origin should disinfect his hands after work and should treat abrasions immediately with iodine. Once attacked, the patient should be treated as early as possible with subcutaneous injections of serum in the flank or thigh. The author gave 40 cc. morning and evening until local symptoms were checked. Antiseptic dressings, such as 1:100 mercuric chloride in physiologic solution, should be applied locally. After the infection is overcome, these wet dressings should be replaced with an ointment containing balsam of Peru and iodoform, 1:100, or with powders, such as thymol iodide.

35: 985-992 (Aug. 10) 1927

*Suture of Abdominal Wall in Single Layer After Laparotomy. M. Desmarest.—p. 985.
*Genital Hemorrhages in Woman Arrested by Sodium Citrate Injections. S. Tzovaru and D. Mavrodin.—p. 986.
History of Obstetrics at Montpellier. P. Delmas.—p. 989.

Suture of Abdominal Wall in Single Layer After Laparotomy.—Desmarest condemns suture of the abdominal wall in a single layer with wire as a dangerous method, which predisposes the wall to infection, may cause secondary eventration and is not esthetic.

Speedy Arrest of Genital Hemorrhages in Woman by Means of Injections of Concentrated Sodium Citrate Solution.—From a review of the literature and from their own cases, six of which are reported, the authors conclude that whether genital hemorrhages are due to an alteration of the blood composition, or to an altogether local cause, concentrated solutions (30:100) of sodium citrate, given intravenously, are the most efficacious means of treating them.

Progrès Médical, Paris

53: 1129-1176 (July 23) 1927

*"Complementary Opposition" in Normal and in Hemiplegic Subjects. L. Bard.—p. 1137.
*Use of Streptobacillary Vaccine in General Paralysis and Multiple Sclerosis. A. Sézary and A. Barbé.—p. 1146.
Hepatostomy and Suture Without Drainage in Amebic Abscesses of Liver. E. Bressot.—p. 1150.
Indications for Surgical Treatment of Strabismus. F. Terrien.—p. 1155.
Treatment of Convulsion and of Epilepsy. H. Damaye.—p. 1163.
Ambulatory Treatment of Varicose Ulcer. Aimes.—p. 1164.

"Complementary Opposition" in Normal and in Hemiplegic Subjects: Its Importance in General Physiology.—Although most of the simultaneous, bilateral voluntary movements are symmetrical and require the equally active intervention of both hemispheres, there exist, none the less, in normal subjects conjugate movements which bring into play different muscles situated on both side of the body, which, however, spring from the active kinesis of a single hemisphere. The command of the movement of complementary counterpressure of the heel in elevation of the opposite leg comes from the homolateral hemisphere. The phenomenon of complementary opposition is a normal voluntary association, preserved, and usually scarcely modified, in hemiplegic subjects, while the synkineses, properly so-called, of these patients are pathologic disturbances of normal associations, which proceed from a distinct physiologic mechanism and obey different laws.

Use of Streptobacillary Vaccine in General Paralysis and in Multiple Sclerosis.—Aware of the high mortality (as much as 16 per cent, according to Crouzon), among patients with general paralysis treated by means of malaria, Sézary and Barbé attempted to substitute for the hematozoa a vaccine prepared from Ducrey's streptobacillus. Preparations, increasingly rich in microbes, were injected into the veins of six general paralytics. Attacks of fever lasting from three to five hours followed. The vaccine is not toxic. Results of treatment in these six cases were nil. Hence, he says, the action of malaria therapy in general paralysis cannot be attributed solely to the fever, and one may question the necessity of provoking such violent and dangerous attacks to ameliorate the condition of the patients and ask whether a chemotherapy without fever should not be attempted. Three patients suffering from disseminated sclerosis were also treated with the vaccine without effect.

Revue de Chirurgie, Paris

65: 285-353, 1927

Results of Operations on Sympathetic in Scleroderma and in Dermatitis. R. Leriche and R. Fontaine.—p. 285.
Surgery for Intestinal Occlusion Caused by Gallstone. A. Chenut. —p. 319.
Traumatic Lesions of Semilunar Bone. D. Ducourthial.—p. 328.
*Results of Periarterial Sympathectomy. S. Roubacheff.—p. 341.

Results of Periarterial Sympathectomy: Questionnaire to Russian Physicians.—The statistics were based on 284 cases. A favorable result was obtained in 57 per cent. Remote results (within a year) were favorable in twenty-one cases. Operation was done for gangrene in 118 cases; for ulcers of various origins, in fifty-one cases; for causalgia, in twenty-nine cases; for perforating disease of the foot, in six cases; for Raynaud's disease, in eleven cases; for tuberculosis, in thirty-seven cases; on various indications, in thirty-two cases. In this series, death occurred three times; in one case it could not be connected with the operation.

Revue Française de Pédiatrie, Paris

3: 275-408 (July) 1927

Digestive Disturbances of Infants. P. Rohmer.—p. 275.
*Azotemia in Digestive Disturbances of Infants. P. Rohmer et al.—p. 277.
*Acidosis in Digestive Disturbances of Infants. P. Rohmer et al.—p. 286.
Importance of Rôle of Hypothrepsia in Genesis of Choleriform Diarrhea. L. Bytek.—p. 297.
Maxillo-Facial Dystrophies. J. Meyer and Nicolle.—p. 304.
Chronic Purpura with Thrombopenia. H. H. Lautier et al.—p. 341.
Epidemic Pemphigus of Infants. L. Garot.—p. 353.
Specific Treatment of Scarlet Fever. H. H. Lautier and P. Dreyfus.—p. 365.
Transplacental Tuberculous Infection. L. Ribadeau-Dumas.—p. 370.
Actinotherapy: "Artificial Beach." J. Saidman.—p. 393.

Clinical Value of Azotemia in Digestive Disturbances of Infants.—In three cases of chronic athrepsia without acute digestive disturbances, the urea content of the cerebrospinal fluid was normal. In a fourth case, in which it was slightly increased (0.64 Gm. per liter), the athrepsic condition was complicated by bronchopneumonia. In ten other athrepsic infants with diarrhea, the urea content of the cerebrospinal fluid was always normal. In an eleventh case, in which there was a slight urea increase (0.60 Gm. per liter), there was bronchopneumonia as well. Of twelve cases of cholera infantum, in six the urea content was increased, while in the other six it was normal. In infections, on the other hand, there

was increased urea content in three out of four cases. A bibliography is attached.

Acidosis in Digestive Disturbances of Infants. — Acidosis was found in all Rohmer's cases of cholera infantum, it was most intense in the fatal cases. It does not seem to be in direct relation to the diarrhea. While increased concentration of the blood does not seem to be directly connected with the acidotic condition, the latter was generally accompanied by slackening of the capillary circulation. Interdependence between acidosis and hyperazotemia does not exist.

Scalpel, Brussels

80: 635-662 (July 9) 1927

*Gingivodental Etiology of Cancer. A. Heyninckx.—p. 635.
False Renal Colics in Case of Megacolon. A. d'Haenens.—p. 645.

Gingivodental Etiology of Cancer.—Experimental work with young mice seems to indicate that the greenish gray fetid tartar, always present in patients with cancer of the respiratory and digestive tracts, contains organisms capable of producing cancer.

Archiv f. exper. Pathologie u. Pharmakol., Leipzig

124: 129-258 (Aug.) 1927

Syncholia and Syncholica. T. Brugsch and H. Horsters.—p. 129.
Physiology and Pharmacology of Uterine Musculature in Pregnancy. H. Knaus.—p. 152.
Cathartic Action of Oxyanthrachinone. H. Fühner and J. de Dios Fernandez.—p. 185.
*Effect of Insulin on Respiration. E. Rechnitzer and E. Rosenblüth.—p. 192.

Effect of Insulin on Respiration.—About fifteen minutes after the intravenous injection of insulin, Rechnitzer and Rosenblüth noted a change in the depth and frequency of respiration, the appearance of tachypnea. These symptoms were not related to the drop in the blood sugar curve. The effect of the insulin is believed to be on the respiratory center direct, with indirect effect on blood gases and the respiratory quotient, circulation in general and, finally, on the nervous system.

Archiv für Gynäkologie, Berlin

130: 415-584 (July 28) 1927

Sex Characteristics. J. Halban.—p. 415.
Physiology of Puerperium. L. Kraul.—p. 439.
Exfoliation of Uterine Musculature in Pregnancy. E. Terruhn.—p. 476.
Origin of Congenital Skin Defects. K. Lundwall.—p. 487.
*Birth Mechanism in Contracted Pelvis. P. Schumacher.—p. 509.
*Total Gangrene of Puerperal Uterus. E. Weinzierl.—p. 521.
Examination of Blood in Pregnancy. M. Krüger-Franke et al.—p. 534.
Collective Mass Theory in Clinical Medicine. H. Rautmann.—p. 563.
Influence of Erythrocyte Count on Sedimentation. H. Schäfer.—p. 566.

Birth Mechanism in Transversely Contracted Pelvis.—Schumacher presents in detail the information obtained by experiments with a phantom pelvis and child's skull. Various degrees and forms of transverse contraction and various positions of the head on entrance into the pelvic inlet were studied. The different obstacles to be overcome and the possibility of spontaneous delivery are discussed in relation to each variety.

Total Gangrene of Uterus in Puerperium.—On the seventeenth day of a septic puerperium, a primipara suddenly developed symptoms of diffuse pelvic peritonitis. On operation, the uterus was discovered to be totally gangrenous and to be lying, as a sequestrum, wholly unattached in a serous sac. The latter had ruptured, and directly beneath this tear there was a defect in the uterus. The patient died on the third day following. As regards the etiology, Weinzierl mentions that labor had been long and difficult and had been terminated by forceps extraction. The membranes had ruptured early, and before the birth infection had set in, originating, no doubt, in verrucae acuminatae of the introitus and labia. He mentions also the possible influence of the exaggerated contractions produced by medicines given to stimulate uterine activity. If it had not been for the rupture of the serosa, the sequestrated uterus might have been expelled spontaneously and it is possible that the patient would have recovered.

Archiv für klinische Chirurgie, Berlin

146: 651-818 (July 12) 1927

Resection for Exclusion and Recurrent Jejunal Ulcer. H. Haberer.—p. 651.
Peptic Jejunal Ulcer After Anterior Gastro-Enterostomy and Braun's Anastomosis. W. Heidbreder.—p. 685.
Nutrition of Intestine After Ligation of Mesenteric Vessels. R. Demel.—p. 701.
*Origin of Cancer. W. Caspari.—p. 711.
Healing-In of Bone Sequestrum in Finger. J. Heine.—p. 737.
Staining Goiter Tissue with Azo-Carmine-Mallory Dye. A. Troell.—p. 754.
*Tschmarke's Treatment of Burns. K. Reschke.—p. 763.
Function of Human Parotid Gland. S. H. Lukomsky.—p. 777.
Physiology of Epiphyseal Cartilage. H. Maass.—p. 787.
*Splenectomy in Cirrhosis of Liver. E. L. Beresow.—p. 794.
Lymphangiomas, Particularly of Bone. H. Mandel.—p. 804.
*Inflammatory Diseases of Diaphragm. M. Wicker.—p. 809.

Origin of Cancer.—Caspari propounds a hypothesis based, in part, on "necrohormones," which are "proliferation substances" present in dead cells and in tissue extracts. They are, he believes, identical with Gye's invisible virus and with Centanne's "blastins." According to their concentration, these substances excite cell division or kill cells. To produce cancer the action of the necrohormones must be associated with deficient blood supply, entailing deficient supply of oxygen. Normal cells oxidize nutrient material with the aid of oxygen, whereas the metabolism of the cancer cell is fermentative, even when it gets sufficient oxygen. Cancer cells arise from the adaptation of one or more normal cells, in a region with deficient blood supply, to an anaerobic metabolism. If this theory is soundly based, the precancerous condition should be treated by the application of heat and by such other methods as will bring blood to the endangered region. He describes experiments in which he injected a sterile substance, containing no living cells, into mice previously treated with subcutaneous injections of tar or intravenous injections of India ink, as sensitizers. True tumors developed in only two of the animals. Photomicrographs of the results in these experiments are reproduced.

Tschmarke's Treatment of Burns.—Excellent results from Tschmarke's treatment of burns (thorough washing with soap and water and alcohol under general anesthesia) are reported by Reschke from Pels Leusden's clinic. The details of a large number of cases are given and, for comparison, those of cases treated otherwise. The differences in favor of Tschmarke's treatment are shown particularly in the time of healing and in the absence of infection and of pain in the course of healing. Slight shock and a burn covering as much as one third of the body surface are not contraindications.

Splenectomy in Certain Forms of Cirrhosis of the Liver.—Hypertrophic cirrhosis of Hannot's type is the only form suitable for treatment by splenectomy, in Beresow's opinion. Indications for splenectomy are hemolytic icterus of long standing, beginning anemia, tendency to bleeding from the nose and gums, with increased coagulation time, and subjective disturbances. In Beresow's patient (observed for only two months), removal of the spleen was followed by almost complete disappearance of the icterus, disappearance of urobilin from the urine, subsidence of subjective pain sensations, and of the feeling of pressure and attacks of pseudocolic. Epistaxis ceased, the coagulation time and the blood picture became normal and the hemoglobin rose from 78 to 95 per cent. The liver became two fingerbreadths smaller and the patient gained in weight.

Inflammatory Diseases of the Diaphragm.—Diaphragmatitis is in most cases secondary to disease situated close to the diaphragm and its diagnosis may aid in locating the original lesion. In acute cases the symptoms resemble those of peritonitis; differentiating features are: Spontaneous pain is most severe in the upper part of the abdomen. It tends to radiate laterally to the lumbar region. The contraction of the abdominal muscles, diffuse and of great intensity, is seen most often in the upper portion of the abdominal wall. Light palpation of the abdomen is often extremely painful, but the localized pain on deep palpation, characteristic of peritonitis, is not present. The question between peritoneal and diaphragmatic disease is finally decided by examination of the thorax. A zone of dullness on percussion beneath the lower lobe of one

of the lungs may be caused by exudate in the pleural cavity or by elevation of the diaphragm. The onset of inflammation of the diaphragm is stormy; after a few days the course becomes subacute. The contraction of the abdominal muscles continues long after the pain and tenderness have disappeared. The pulse is not frequent. Two illustrative cases are described. Fluoroscopy proved useful in diagnosis. Of forty-four cases seen by the author, all except seven originated above the diaphragm.

Beiträge zur Klinik der Tuberkulose, Berlin

66: 265-386 (May 21) 1927

Qualitative Diagnosis of Tuberculosis. O. Ziegler and W. Curschmann. —p. 265.
*Tuberculosis and Mental Condition. K. Schlapper.—p. 274.
Cases of Fibrocaseous Lymph Node Tuberculosis. H. Mayser.—p. 284.
Free Bodies in Pleural Cavity. P. Mende.—p. 293.
Phrenicotomy in Diseases of Upper Lobes of Lung. B. Fornet.—p. 297.
Roentgenoscopy and Roentgenography in Pulmonary Tuberculosis. A. Genersich.—p. 300.
*Staining Tubercle Bacilli. M. J. Gutmann.—p. 308.
*Gymnastics in Pulmonary Tuberculosis. Tegtmeier.—p. 317.
Genital Tuberculosis in Women. H. H. Kalbfleisch.—p. 328.
Respiration in Increased Air Pressure. A. Anthony.—p. 340.

Tuberculosis and Mental Condition.—Schlapper has not been able to discover any etiologic relationship between tuberculosis and the mental condition of the patient. However, there is a change in "psyche" which he designates as the "tuberculous character." This change is partly the result of the toxemia, usually present, and partly the result of the changed living conditions of the patient, especially a change in environment. He was further unable to discover any relationship between tuberculosis and vomiting.

Staining Tubercle Bacillus.—Gutmann favors the dark field for the study of stained slides for tubercle bacilli as against the illuminated field. He says that the bacilli are more visible and more easily discovered in the dark field. Furthermore, he prefers either not to counterstain at all or to do so very feebly with methylene blue, because the counterstain obscures the bacilli, even though it may seem to give a better picture because of the contrast. Some of the counterstain is always taken up by the bacilli, more by some than by others. There is individual variation in bacilli in this respect.

Gymnastics in Pulmonary Tuberculosis.—Tegtmeier is an ardent advocate of what he terms "air baths" and carefully regulated and prescribed gymnastics in the treatment of pulmonary tuberculosis. By means of the air baths the lungs are bathed in air. This is done by gymnastic exercises which increase respiratory effort and convey more oxygen into the lungs, thus stimulating tissue metabolism, increasing the functional activity of the heart and other organs, and, finally, raising the resistance to tuberculosis. The author stresses the importance of prescribing the gymnastics and insists that a qualified physical director be entrusted with carrying them out. He urges not to scheme or speculate but to prescribe only what is known to have the desired effect. The productive form of the disease lends itself best to this treatment; the exudative type not at all. Patients with a tendency to hemorrhage, and those exhibiting elevation of temperature, fatigue or pain after exercise must be excluded. These exercises are to be taken daily, out in the open or in a room, depending on the season of the year. The patient is clad only in trunks and gymnasium shoes. The details of the various courses of exercises for each type of patient are given.

Dermatologische Wochenschrift, Leipzig

85: 1133-1160 (Aug. 13) 1927

Poikilodermia Atrophicans Vascularis. H. Geisler.—p. 1133.
*Allergic Skin Reactions in Gonorrhea. E. Rajka.—p. 1138.

Allergic Skin Reactions in Gonorrhea.—Subcutaneous injection of a vaccine containing from 20 to 25 millions of gonococci per cubic centimeter, killed at low temperature, provoked a skin reaction in 85 per cent of 131 patients with gonorrhea. A few nonspecific reactions occurred in the controls. The reaction reached its maximum, on the average, in from twenty-four to forty-eight hours and lasted at least seventy-two hours. It consisted usually of hyperemia with slight exudative and cellular infiltration; edema or a central papule was often present. The skin allergy was found in all stages and forms of the disease. It was not lasting. Mixture of the vaccine with immune serum, with normal serum or with the serum of patients with gonorrhea decreased the intensity and duration of the reaction in from about 30 to 90 per cent of the cases. The immune serum mixture produced the highest percentage. Mixture with normal or gonorrheal serum resulted in increased reaction in about 20 per cent of cases.

85: 1217-1280 (Sept. 3) 1927

Dermo-Elastometry. F. Schmidt-Labaume.—p. 1217.
Local Amyloidosis of Skin. C. Gutmann.—p. 1223. C'td.
Heredity of Finger Patterns and Hereditary Differences of Uniovular Twins. Leven.—p. 1229.
*Keloid Formation and Malignant Syphilis. E. Vollmer.—p. 1233.
Intratumorous Treatment of Boeck's Sarcoid with Thorium X. E. Meirowsky.—p. 1239.
Action of Bucky's Soft Rays on Capsule of Rabbit Kidney. C. Stern. —p. 1242.
Gold Sol Reaction in Syphilitic Cerebrospinal Fluid. E. Bender.—p. 1249.
Procedure for Obtaining Permanent Gonococcus Cultures. W. Krantz. —p. 1252.
Apparatus for Continuous Irrigation in Vulvovaginitis in Children. H. Stolzenberg.—p. 1255.

Keloid Formation and Malignant Syphilis.—A girl, aged 22, became infected with syphilis in the tonsil. She received nonspecific protein treatment, under which the disease developed in a malignant manner, with extensive skin necroses. The healing of the necrotic areas, which followed thorough treatment with arsphenamine, was accompanied by keloid formation.

85: 1281-1308 (Sept. 10) 1927

*Connection Between Vulvitis Aphthosa and Erythema Nodosum. E. Schnabl.—p. 1281.
Local Amyloidosis of Skin. C. Gutmann.—p. 1283. C'cn.
Late Recurrence of Syphilis After Abortive Treatment. H. Hecht.—p. 1291.

Connection Between Vulvitis Aphthosa and Erythema Nodosum.—The patient, whose case is described by Schnabl, presented gangrenous ulcerations in the mouth and pharynx and aphthous vulvitis. Smears from both lesions contained *Bacillus fusiformis* and *Spirochaeta refringens*. Besides this, there were nodules, resembling erythema nodosum, in the skin and subcutaneous tissue of both legs. Schnabl suggests two explanations of the pathogenesis: (1) Both the vulvitis aphthosa gangraenosa and the erythema nodosum developed as sequelae of Plaut-Vincent's angina. (2) Plaut-Vincent's angina and the vulvitis developed simultaneously; the erythema nodosum was a sequela of these. It was caused by toxins originating from the fusiform bacillus and, in part, from disintegrated protein.

Deutsches Archiv für klinische Medizin, Leipzig

156: 1-128 (Aug.) 1927

Spirometry in Heart Disease with Pulmonary Stasis. A. Engelhard.—p. 1.
Specific-Dynamic Action of Albumin and Its Behavior in Muscle Work. K. Bahn.—p. 67.
*Rôle of Capillaries in Hemorrhagic Diathesis. H. Ellmer.—p. 80.
*Infantile Nanosomia. F. Bachmann.—p. 89.
New Explanation of P Wave Localizations in Tawara Rhythm. J. T. Peters.—p. 99.
Action of Insulin on Polyuria of Diabetes Insipidus: Combined Action of Insulin and Pituitary Extract on Water Metabolism. O. Klein and H. Holzer.—p. 111.

Rôle of Capillaries in Hemorrhagic Diathesis.—Ellmer confirms the work of Magnus, namely, that under ordinary circumstances injured capillaries contract, thus playing a not inconsiderable rôle in stopping hemorrhage. Dilated capillaries, on the other hand, possess little, if any, contractile power; therefore, hemorrhage is neither checked nor prevented. If the blood chemistry is normal, then the inherent coagulating power in blood will check hemorrhage even when it comes from a dilated capillary. However, in cases of hemophilia or thrombopenia hemorrhages not only occur with ease but are checked with great difficulty or not at all.

Stunted Growth; Infantile Nanosomia.—Bachmann reports the case of a boy, aged 11, who was underdeveloped as to size but whose development was perfectly proportioned. His

basal metabolism was the same as that of a normal child of the same size and weight. The author regards this as being a case of infantile nanosomia.

Zeitschrift für Hygiene und Infektionskrankh., Berlin

107: 487-816 (July 25) 1927

Nicotine in Cigarettes. A. Winterstein and E. Aronson.—p. 487.
Insects and Plague. H. M. von Jettmar.—p. 498.
Calcium Cyanide for Combating Harmful Insects in Greenhouses. L. Schwarz and W. Deckert.—p. 510.
Results of Antirabic Injections by Pasteur and by "Dilution" Method. B. Koldajew.—p. 523.
Venereal Diseases in Navy and Their Control. H. Ruge.—p. 543.
"Structure Analysis" in Lysins. K. Marcuse.—p. 563.
Treatment of Sewage with Activated Sludge. H. Bruns and F. Sierp. —p. 571.
Chlorine Gas Sterilization of Drinking Water. G. Lutz.—p. 585.
Herpes Simplex and Zoster. H. Freund and B. Heymann.—p. 592.
*Experimental Immunization Against Tuberculosis. B. Lange et al.—p. 645.
*Immunizing Against Cholera. W. E. Engelhardt and J. C. Ray.—p. 663.
Dry Lymph. L. Otten.—p. 677.
Lactic Acid Formation in Scarlet Fever Streptococci and Ordinary Pus Streptococci. A. Kappus.—p. 697.
Relation of Toxins and Albumin Antigens to Sodium Salts of Alkyl Resorcin Carbonic Acids. L. Bleyer.—p. 702.
Combining Proportions of Dysentery Toxin and Dysentery Antitoxin. H. Schlossberger and F. W. Wichmann.—p. 716.
Variability in Streptococcus-Pneumococcus Group. W. Silberstein.—p. 725.
Transmissible Lysis as Function of Temperature. E. Berger and H. Roesli.—p. 731.
Kahn's Reaction in Serodiagnosis of Syphilis. B. Abadjieff.—p. 742.
Serologic Procedures in Tropics (Java). P. Papamarku.—p. 755.
Passive Anaphylaxis. K. Iwanoff.—p. 781.
Ridding Objects of Adsorbed Hydrocyanic Acid Gas. L. Schwarz and W. Deckert.—p. 798.

Experimental Immunization Against Tuberculosis.—Lange and his associates succeeded in checking the course of experimentally induced tuberculosis by previous immunization of the animal with killed tubercle bacilli. They were unable, however, to prevent infection entirely. Subcutaneous and intracutaneous injections of large doses of killed bacilli gave better results than intravenous injections.

Immunizing Against Cholera.—Engelhardt and Ray produced cholera experimentally by the oral route, but oral immunization proved to be a failure, with either living or dead vibrions, and even after bile sensitization. Well animals could not be infected orally. Only when attempts at immunization had been made previously was this possible. The authors advise caution in attempting oral immunization of human beings.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

71: 505-584 (July 30) 1927

*Treatment of Prostatic Lesions with Electrocoagulation. J. G. Remijnse. —p. 508.
Bony Atrophy in Debility. A. E. Sitsen.—p. 514.
Local Diphtheria Epidemic. G. D. Hemmes.—p. 519.

Treatment of Prostatic Lesions with Electrocoagulation.—Ten patients with complete retention of urine from prostatic disease were treated successfully by Remijnse with electrocoagulation. The method is suitable, he states, for all prostatic lesions that cause urinary retention. Incontinence has never followed.

Acta Chirurgica Scandinavica, Stockholm

62: 1-184 (July 28) 1927

Pulling Power of Extension Appliances. K. R. Inberg.—p. 1.
*Injection Treatment of Varicose Veins. V. Meisen.—p. 17. In English.
*Fracture of Lower End of Radius. V. Eskelund.—p. 41. In English.
*Foreign Body in Kidney. E. Brattström.—p. 56. In English.
*Heredity in Varicose Veins of Leg. A. Berntsen.—p. 61.
*Secondary Resections of Stomach After Gastro-Enterostomy. G. Bohmansson.—p. 86. In English.
Roentgenoscopy of Fracture of Femur. R. Faltin.—p. 105.
*Bloody Discharge from Nipple. J. G. Kopp.—p. 115.
Prostatectomy. A. Troell.—p. 133. In English.
*Primary Resection of Stomach in Perforating Gastric and Duodenal Ulcers. A. Odelberg.—p. 159. In English.
*Etiology of Hydronephrosis. J. Hellström.—p. 167. In English.

Injection Treatment of Varicose Veins.—Among 500 cases of varicose veins treated by Meisen by intravenous injection, there were 135 complications with ulcer cruris and forty with chronic eczema. The solution used consisted of from 18 to 30 per cent of sodium salicylate with 10 per cent of sodium chloride. The maximal dose per injection is 10 cc. The needle is inserted with the patient in the standing position, to make sure that it is not caught by the opposite vein wall. Then the patient is requested to lie down while the injection is made. After the injection—and while the leg is still elevated—a gauze dressing is laid on, held in place by an elastic web bandage. The injection is repeated every other day, if no tenderness develops. Meisen has also made this injection in thirty-five cases of hemorrhoids with excellent results.

Treatment of Colles' Fracture.—Eskelund analyzes his results in 342 cases of Colles' fracture, asserting that they were better than is usually the case. The functional result was excellent in 60 per cent, good in 33 per cent, medium in 6 per cent and bad in 1 per cent. The anatomic result was excellent in 55 per cent, good in 36 per cent, and medium in 9 per cent.

Foreign Body in Kidney.—Brattström relates a rare case of foreign body in the kidney of a boy, aged 13. The operation revealed in the renal pelvis two grass-straws around which had formed concretions. In explanation of this observation, the author advances the hypothesis that the grass-straws had been introduced into the urethra from an erotogenous motive and so had found their way into one of the ureteral orifices, subsequently traveling upward to the renal pelvis.

Heredity in Varicose Veins.—Postmortem studies and clinical observations lead Berntsen to stress the importance of heredity in these cases and to suggest that the cause might be atrophy of the muscular fibers in the media, while the elastic tissue in the earlier stage tries to stave off the dilatation through hypertrophy. The best operative results are obtained by extensive extirpations of the varices, probably because of in so doing abnormal inflow through incompetent valves and anastomotic branches to deep veins is prevented. It is definitely advised to operate before resulting conditions are too advanced. Good results may be obtained even in comparatively elderly patients. Against operative treatment is the risk of embolism, which occurred in 7.2 per cent of 376 patients. The mortality was 0.7 per cent.

Secondary Resection After Gastrostomy.—Bohmansson gives an account of fourteen cases in which gastro-enterostomy had previously been done and in which the symptoms had returned or become aggravated after a shorter or longer time. The main part of the author's material is composed of gastralgic conditions with the so-called Dénéchan's secondary symptom complex. The clinical picture is similar in all cases; the resected specimen shows signs of suppurating gastritis, of more or less chronic type, or peptic ulcers are simultaneously found. Satisfactory results are obtained in these cases by partial gastrectomy whether ulcer be present or not. The clinical signs and symptoms are apparently due more to inflammatory changes than to a possible ulceration, and the typical periodicity in the clinical course probably depends on fluctuations in the different stages of the gastritis. A second group is composed of those cases in which the symptoms are referred, entirely or in part, to the bowel, and a more or less typical colitis is present. It would seem that gastro-enterostomy is frequently performed on insufficient indications; in other cases the tendency to colitis, that perhaps was present before the primary operation, has manifested itself as grave intestinal symptoms after the gastro-enterostomy. It is particularly the altered mode of ventricular emptying with the secondary momentary overfilling of the small intestine dependent thereon that renders the possibility of postoperative digestion less favorable and constitutes a predisposing factor to postoperative intestinal symptoms. The treatment in these latter cases has consisted in removal of the gastro-enterostomy. In this way greater possibilities for dietetic treatment have been obtained, but not complete recovery. Nor has the operation been directly aimed at the original trouble. There seems no indication in these cases for partial gastrectomy. Judging from the results obtained, re-establishment of the physiologic passage and a fractional active emptying seem to be the factors playing the greatest part in avoiding any more serious postoperative intestinal disturbances.

Bloody Discharge from Nipple.—Among 181 cases of cancer of the breast, Kopp found a bleeding nipple in twenty cases. In five of these the discharge was present before the formation of tumor or it was the only symptom. In nine of the cases a cancerous degeneration of a benign tumor was very probable. Of the forty-five patients with benign tumor of the breast, twenty-two had a bleeding discharge. In sixteen cases no tumor was clinically distinguishable, although a duct papilloma or cystic breasts were found.

Resection of Stomach for Perforating Peptic Ulcers.—Odelberg advocates that resection of the stomach be done only in the early cases of perforation.

Etiology of Hydronephrosis.—In two of the three cases of hydronephrosis reported by Hellström, the pelvic dilation was probably caused by the oblique course of the upper end of the ureter through the pelvic wall. This was probably of congenital origin. In the third case, spastic conditions at the ureteropelvic junction had probably occasioned the hydronephrosis.

62: 185-398 (Aug. 25) 1927

Abdominal Reflexes: Diagnostic Value in Acute Affections of Abdomen. H. Olivecrona.—p. 185.
*Essential Hematuria. O. Römcke.—p. 211.
*Myoma of Small Intestine. K. Key-Åberg.—p. 261. In English.
Epithelioma of Tongue: Metastases in Lymphopoietic Centers. R. Calvanico.—p. 276.
*Results in Gallstone Cases Treated by Operation. E. Dahl-Iversen.—p. 295.
Adenoma of Umbilicus. A. J. Palmén.—p. 310.
*Operative Treatment of Lung Tumors. G. Diviš.—p. 329.
Abscess of Liver After Panaritium. A. Troell.—p. 342. In English.
Infected Cyst of Common Bile Duct. H. Olivecrona.—p. 347.
Treatment of Fractures of Astragalus. H. Olivecrona.—p. 353.
Foreign Bodies in Duodenum. G. Levander.—p. 358. In English.
*Extraction of Ureteral Calculus. W. Möller.—p. 367.
*Treatment of Pyarthrosis of Knee. R. Ingebrigtsen.—p. 373.

Essential Hematuria.—Seventeen cases of essential hematuria are analyzed by Römcke and Serck-Hanssen. All underwent operation and, with the exception of two cases, were examined microscopically. Clinically, most of the cases did not present other symptoms than bleeding, which lasted from a few days to twenty years, varying greatly in intensity. In certain cases it was so abundant that the clots in the bladder caused difficulty in the passing of urine. Microscopic examination of the extirpated kidney (nine cases) or biopsy gave the following results: five times nephritic changes were discovered, pyelonephritis once, subcapsular hemorrhage once. On eight occasions definite pathologic changes were not discovered (two cases were not microscopically examined at all, of which one was evidently a pyelonephritis). The nephritic changes chiefly consisted of interstitial round cell infiltrations. Changes in glomeruli were proved only once. Definite vascular changes were not found. The seat of the hemorrhage was in and between the straight tubules. In one case only was it located subcapsularly.

Myoma of Small Intestine.—A man, aged 65, presented a swelling in the abdomen, about the size of a child's head, of smooth and elastic consistency, extending from slightly above the navel to almost down to the symphysis, leaving the flanks free. Weber's reaction was found positive in the feces. There was marked secondary anemia. On laparotomy the tumor was found intimately connected with a loop of the small intestine; it was therefore extirpated in conjunction with resection of the intestine. The tumor weighed nearly 1,280 Gm.; almost one-fourth of its volume was situated within the intestinal lumen and about three-fourths outside the plane of the intestinal wall. The microscopic picture was that of a levicellular fibromyoma, probably arisen from the innermost layer of the tunica muscularis.

Results of Operation for Gallstones.—Reexamination by Dahl-Iversen of 196 cases of gallstones showed the same frequency of relapse after cholecystectomy as after cholecystostomy. After each operation relapse occurred in 19 per cent of the cases.

Surgery of Lung Tumors.—A woman, 42 years of age, when 3 year old fell out of the perambulator and received an injury on the left side of her breast, just above the nipple. Some years later a tumor appeared in the same place which, removed first when she was 7 years old, reappeared repeatedly on the same spot, always after the interval of several years, so that in thirty-five years the patient was operated on ten times. The last time was in May, 1925, and after histologic examination the tumor was stated to be a sarcoma spinocellulare. In August, 1926, there was found an isolated tumor in the lower lobe of the right lung, which was diagnosed as a sarcomatous metastasis of the original tumor. The tumor was removed by thoracotomy. Six months after the operation, the general and local condition of the patient was very good.

Extraction of Ureteral Calculus.—In a case of calculus in the intravesical part of the ureter, Möller made use of a pair of Brüning's forceps—intended for extraction of foreign bodies in the bronchi—which he inserted into the bladder at the side of the cystoscope. By application of suitable endpieces the instrument may be used first for careful dilatation of the ureteral orifice, then for grasping and extracting the concretion. The introduction of the instrument is technically simple and the manipulations, all the time controlled by the eye, are exact, painless to the patient and apparently free from danger. Its usefulness is restricted to concretions in the lowermost part of the ureter in women.

Treatment of Pyarthrosis of Knee.—In seven cases of pyarthrosis without fracture of the bony ends active movements were carried out by Ingebrigtsen after Willems' method. The result was fully mobile joints in five cases and slightly restricted mobility in two cases. No other method succeeded in draining the joint so completely. In pyarthrosis complicated by fracture into the joint active movements are not to be recommended. In three such cases, resection was carried out with satisfactory result.

Acta Medica Scandinavica, Stockholm

66: 499-590 (Aug. 31) 1927

Indices and Diameters of Erythrocytes, etc. S. Jørgensen and E. Warburg.—p. 499. In English.
*Physiology of Heart in Uncomplicated Total Heart Block. G. Liljestrand and E. Zander.—p. 501. In English.
*Chemical Changes of Blood in Pyloric Obstruction: Effect of Stomach Washings. H. A. Salvesen.—p. 518. In English.
Function of Contracted Kidney on Basis of Cushny's Theory of Urine Formation. Y. Åkerrén.—p. 524.
*Calcium-Parathyroid Treatment of Epileptics: Effect on Ammonia Regulation and Clinical Condition. J. Madsen.—p. 536. In English.
Atypical Intermittent Hemoglobinuria. E. B. Salén.—p. 566.
Hereditary Polydactylism and Syndactylism. O. Thomsen.—p. 588.

Heart Functioning in Heart Block.—Liljestrand and Zander report a case of total heart block occurring in a young man, showing no other symptoms of organic or functional heart disease. The block probably developed after infectious diseases contracted during the patient's early childhood. The patient was able to do very heavy muscular work and take part in athletics. The increased ventricular rate is caused by acceleration of the idioventricular center and not by extrasystoles, as is shown clearly by the electrocardiograms. After muscular work the tachycardia of the auricles and ventricles quickly disappears, that of the ventricles somewhat more quickly than that of the auricles.

Blood Chemistry in Pyloric Obstruction.—The two cases of pyloric obstruction reported on by Salvesen showed low chloride and high carbon dioxide content of the blood serum (95 and 94 volume per cent, respectively). There was an uncompensated alkalosis, no significant change in the bases or blood urea; no tetany. The effect of ten days of stomach washings was an increase in chloride, which to some extent exceeded a decrease in carbon dioxide. Operation restored the normal equilibrium, but the chlorides increased several millimols more than the carbon dioxide decreased.

Calcium-Parathyroid Treatment of Epileptics.—Madsen asserts that Collip's parathyroid extract, combined, when necessary, with calcium therapy, is capable of making dysregulators orthoregulators. In three of five cases there was coincidentally a marked reduction in the number of attacks and the psychic condition was improved. However, the effects of the parathyroid extracts are not proof of a parathyroid insufficiency in epileptics.